

COMPUTERWORLD

Lotus cuts: Major step in makeover

*Tactical changes, shifts
to follow 400 pink slips*

BY ROSEMARY HAMILTON
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp.'s cost-cutting measures, revealed last week, should help address concerns about its leadership role in the microcomputer software market, according to analysts. However, they are not the only medicine Lotus needs, observers said.

Industry analysts said the cost-cutting plan, which includes the layoff of up to 400 of Lotus'



John Owens

Lotus' Manzi pledges to make company's strategy more clear

4,200 employees, is a necessary step to pare down an overblown cost structure. Lotus customers contacted last week said they view Lotus' restructuring as a positive step. Jude Gartland, a senior vice president at Shearson Lehman Brothers, Inc., said that while "you hate to see anyone go through a struggle," he would like to see Lotus "leaner and meaner because that's good for [Shearson] in the long run."

However, some observers said Lotus still faces critical issues that will not be solved by cutbacks alone. In short, analysts said, Lotus needs to show a more aggressive plan for staying competitive in the spreadsheet market, where it is under attack

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Big Blue loosens bureaucratic hold

Restructuring aimed at freeing units to respond faster to users' needs

BY NELL MARGOLIS
CW STAFF

ARMONK, N.Y. — IBM's kick-off of another reorganization last week largely underwhelmed users and analysts, who said they will believe in a new Big Blue when they see it.

However, several major users said they saw an encouraging sign in the unprecedented control — both strategic and operational — that IBM is about to vest in the leaders of the newly independent units.

Moreover, IBM dismissed the fear that appeared to nag users most — that the new units' agility will be bought at the price of sales force chaos.

IBM clearly positioned last week's announcement as just one in a series of changes that will unfold during the next several months. It sketched out a series of structural shifts, including the creation of two new subsidiaries: a high-end printer company and a recruiting and hiring services firm.

The changes also elevated

IBM's storage subsystems operation to an autonomous line of business and gave greater independence to the personal computer line of business.

The laundry list of revisions included no surprises "because there are no real changes," said veteran IBM watcher Robert Djurdjevic, president of Phoenix-based Annex Research. "These are more acknowledgments of jobs people have already been doing and directions the company has already been taking than

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- PC unit gets heightened autonomy, but can it jumpstart sales? Page 92.
- How the big shake-up shakes out. Page 93.
- Freed from mainframe shackles, storage systems unit to tackle drives of all shapes and sizes. Page 93.

CIOs wary of IBM's promise to change

BY CLINTON WILDER
CW STAFF

IBM's largest customers concur with the "no pain, no gain" philosophy espoused in the computer giant's latest reorganization. But some are concerned it may require service trade-offs and lead to hordes of blue-suited sales personnel.

Bob Ferkenhoff, vice president of information services at Chicago-based Sears Merchandise Group, likened IBM's plight to that of Sears: a perennial industry leader that has lost some of its market share to more nim-



Photo: David Joel

"The old rules don't work anymore."

Bob Ferkenhoff
Vice President of
Information Services
Sears Merchandise Group

ble competitors.

"The old rules don't work anymore," Ferkenhoff said. "They have a structure that is still to some degree connected to the past, when they didn't have

to worry too much about competition."

Ferkenhoff said he would love to see lower prices from IBM and believes the restructuring may orient the firm in that direc-

tion — but perhaps at a cost. "They have traditionally surrounded their products with all kinds of support," he said. "To really come to the table with lower costs, there may be a trade-off with levels of service."

However, Jack Cooper, chief information officer at Joseph E. Seagram & Sons, Inc. in New York, said IBM can ill afford to reduce service levels.

"It is more of a management challenge for them now, but the competition will not allow any reductions in service or quality," Cooper said.

Jim Marston, CIO at American President Cos. in Oakland, Calif., took a historical view.

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EPA official: Halon phaseout to accelerate

BY MITCH BETTS
CW STAFF

BALTIMORE — A U.S. Environmental Protection Agency official predicted last week that production of Halon 1301, the gas used in computer room fire-suppression equipment, will be phased out by 1995 because halon is a major culprit in the depletion of the Earth's protective ozone layer.

That would put in motion a dramatic acceleration of the cur-

rent phaseout schedule, which had set the deadline at the year 2000, and would be a strong impetus for data center managers to consider alternative fire protection methods.



Gas tax

The U.S. Congress has ordered a federal excise tax on production of Halon 1301, a gas used in fire suppression gear

	Price per pound
1992	\$0.25
1993	\$0.27
1994	\$26.50
1995	\$31.00

Source: Halon Alternatives Research Corp.
CW Chart: Janell Genovese

The 1995 prediction was made by Eileen Claussen, the EPA's director of atmospheric programs, at an environmental conference held here last week.

Despite Claussen's disclaimer that her prediction was not official U.S. policy, conference attendees considered it a preview of the proposed regulation that the EPA will release in January.

Regulators in the U.S. and abroad are considering accelerating the halon phaseout because of an alarming new scientific report released Oct. 22 by the United Nations. It details the extent of ozone depletion caused by chemicals such as halon that contain chlorine and bromine. Du Pont Co. responded by promising to end halon production by 1995, but environmentalists called for an immediate ban.

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INSIDE



Seth Resnick

Industry veteran Mitch Kapur may fool around with his dinosaur mascot, but he's serious about defending computer users' rights. See In Depth. Page 73.

DEC busts Unix price barrier

Move signals stepped-up competition for low-end vendors such as Sun

BY MARYFRAN JOHNSON
CW STAFF

BURLINGAME, Calif. — Digital Equipment Corp. last week lowered the price threshold for its Unix workstations, breaking into the \$5,000 to \$10,000 territory controlled thus far by Sun Microsystems, Inc.

Analysts characterized the performance of DEC's latest Ultrix/reduced instruction set computing (RISC) workstations as lackluster. This will be remedied next year, company officials said, with a "daughter card" upgrade to a faster CPU chip, once the Mips Computer Systems, Inc. R4000 chip finally ships.

Still, many analysts agreed that performance does not matter nearly as much as price in the low-end workstation arena.

"There are sweet spots in the workstation market, and DEC and Sun are playing by the same rules there. They don't have to be performance leaders," said David Card, an analyst at International Data Corp. in Mountain

View, Calif.

However, David Wu, an analyst at S. G. Warburg Co. in New York, said, "It is very important for DEC to hit this lower price point."

"DEC has never used price to its real advantage, and now they're starting to do that," said Laura Segervall, an analyst at Dataquest, Inc. in San Jose, Calif.

The four workstations and three servers added to the Decstation line are based on the Mips R3000A and R3010A chips.

"The R4000 [chip] is late for everybody — at least a year behind schedule — but that's not DEC's fault," Wu said.

Microsoft Corp. also got into the act by disclosing plans to port the as-yet-unshipped Windows New Technology operating system onto

the Decstation 5000 series late next year. Lotus Development Corp. broadened its relationship with DEC by putting its real-time software on the Ultrix/RISC line.

The entry-level Personal

Decstation Models 20 and 25 target low-end commercial and technical applications running under Unix or MS-DOS. The latter version comes with an emulation package from Insignia Systems.

"It's a nice little machine, and DEC will sell a lot of them," said Robert Herwick, an analyst at Hambrecht & Quist, Inc. in San Francisco.

Current users of the Decsta-

tion 5000 Models 120 and 125 will have the option to bump up system performance in February by buying a 33-MHz removable CPU daughter card.

"It's the performance offered for the price asked that really makes a difference. That and the upgrade path are the most important issues," said George Covert, associate director of Iowa State University's Computation Center, which runs a large multivendor client/server network.

In all, DEC rolled out 19 hardware, software and service products for its RISC line, including a new high-end Decsystem 5900. The \$60,000 system, although loaded with additional memory and disk storage, was dismissed by some analysts as underpowered for its size and price. The preceding Decsystem 5800 has been an abysmal failure for DEC, Card said. "This 5900 is a pretty lukewarm offering that DEC will probably discount heavily in order to sell," he said.

Serving up aces

DEC's workstations and servers at a glance

	Personal Decstation 5000 Model 20	Personal Decstation 5000 Model 240	Decsystem 5900
CPU/Clock speed	R3000A/20 MHz	R3000A/40 MHz	R3000A/R3010A/40 MHz
Specmarks	16.3	32.4	NA
MIPS	21.6	43.0	NA
Memory capacity	40M bytes	480M bytes	64M to 448M bytes
System software	Ultrix 4.2A (Compatible with future OSF/1-based ACE Unix)		Ultrix
Windowing systems	Decwindows, OSF/Motif		NA
Entry price	\$3,995	\$11,995	NA
Availability	January	Immediately	Immediately

Source: Digital Equipment Corp.

CW Chart: Michael Siggins

HP woos IBM users with RISC boxes

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. last week continued its attack on the data center, unveiling two high-end Unix systems that will run mainframe-strength systems software from Computer Associates International, Inc. and other vendors.

The availability early next year of sophisticated systems software for the symmetrical multiprocessors could help HP convince budget-conscious IBM mainframe customers to migrate to more cost-effective reduced instruction set computing (RISC)-based systems, analysts said.

The HP systems, which ship later this month, can handle up

to 2,000 users at about one-fourth the cost of comparable IBM mainframes, said Bernard Guidon, general manager of HP's General Systems Division. HP's four-processor mainframe, the HP 9000 Model 870S/400, lists for \$530,000, compared with IBM's three-processor Enterprise System/9000 320, which begins at \$1.47 million.

Shipments of the HP Precision Architecture-based systems nearly coincides with the projected first-quarter 1992 availability of CA's Unicenter software for HP systems. Unicenter will offer automated storage management, production control, data center automation, security and resource accounting, CA said. According to HP, software for its Unix systems will

also be supplied by vendors such as Cincom Systems, Inc. and Information Builders, Inc.

Other mainframe-size Unix/RISC computers, such as those from Pyramid Technology Corp., do not yet have mainframe-strength systems management software such as the CA software promised for the HP systems.

Judith Hurwitz, editor of "Unix in the Office" at Patricia Seybold's Office Computing Group in Boston, said she believes the new HP systems could help information systems managers heed corporate dictates for less expensive hardware. "When the [IS director] is being told to do it, it's now safer to move off a mainframe," she said.

Despite the cost-cutting potential, HP's new systems do not have users chomping at the bit.

For instance, Ray Zimmermann, director of field office development at Northwestern Mutual Life Insurance Co. in Milwaukee, said, "I don't hear any wild adulation from IS yet."

However, Lew Platt, general manager at HP's Computer Systems Division, claimed that in the last year, more than 50 customers have offloaded mainframe applications to HP's high-end computers.

While HP may have the edge in price, analysts said it may still be tricky to woo IBM customers — those without the chief financial officer breathing down their necks. "HP has shown an astute

'Bushmaster' hacks hard at rivals

HP will introduce an under-\$10,000 Unix-based workstation within the next two months, code-named "Bushmaster" after the lethal South American pit viper, company officials confirmed last week.

The 40-Specmark machine will have a "pizza-box size" footprint and will be capable of churning out more than 500,000 vector/sec. in graphics performance, noted HP Computer Systems Division general manager Lew Platt at a briefing in Palo Alto, Calif.

"We will dramatically improve our competitive position on the RISC workstation market" with the new entry-level HP 9000 700 series workstation, Platt said.

The introduction last week of DEC's entry-level systems poses no competitive threat to HP, Platt added. "We will not go that low in price — or that low in performance."

IBM is also slated to introduce an entry-level, high-performance box in early 1992. The bottom line of its RISC System/6000 workstation line hovers at about \$14,000.

HP President John Young said Bushmaster's introduction had been stalled by delays in Texas Instruments, Inc.'s 66-MHz Viking floating-point chip. He denied that HP was keeping the lower priced system under wraps because its other workstations were selling so well.



HP's Platt didn't lose any sleep over DEC's introduction

MARYFRAN JOHNSON

Upping the ante

HP's high-end Unix systems are ready for the data center

	Model 870S/300	Model 870S/400
Trans./sec.*	NA	173
Max users	1,650	2,000
Processors	3 Precision Architecture	4 Precision Architecture
Main memory	160M to 768M bytes	192M to 768M bytes
Disk max	514.3G bytes	514.3G bytes
List price	\$440,000	\$530,000
Availability	This month	This month

*using TPC-A benchmark

Source: HP

CW Chart: Janell Genovese

understanding of mainframe requirements, but IBM still has a stronger reputation, and people are still reluctant to drop mainframes," said Michael Goulde, a consultant at Open Systems Advisors, Inc. in Boston.

HP also announced two mid-

range Unix servers. The HP 9000 Model 867S, a six-processor system running at 74.6 transactions per second, lists for \$112,500. A 12-processor system, the Model 877S, is priced at \$140,000. Both are expected to be available next month.

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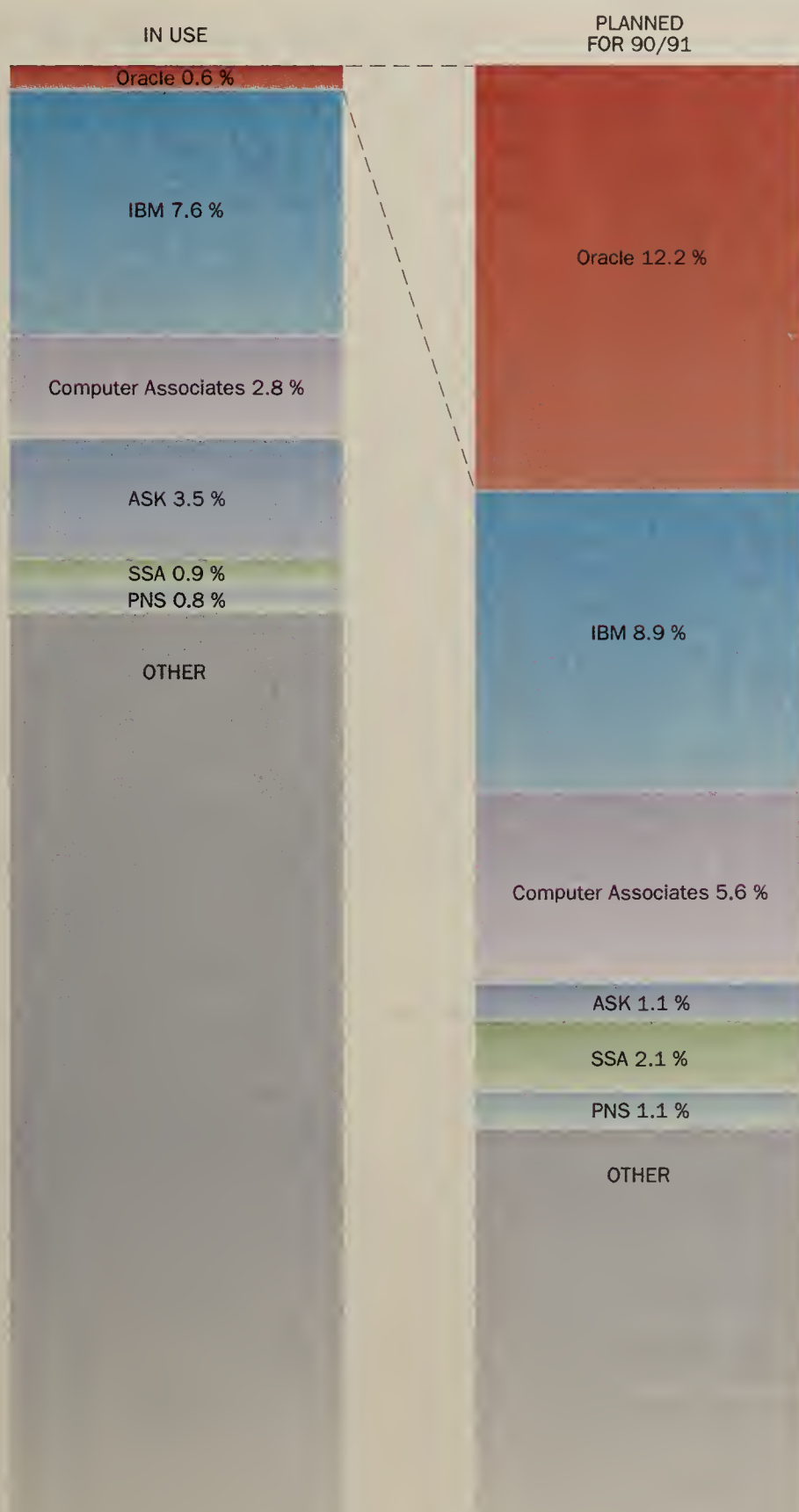
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AT&T to acquire Teradata for NCR unit

BY ELLIS BOOKER
CW STAFF

DAYTON, Ohio — Recent rumblings that technology partners NCR Corp. and Teradata Corp. might part company ended abruptly last week as AT&T, NCR's parent, agreed to buy Teradata in a stock deal valued at \$520 million.

A pioneer in high-performance database systems that use a parallel microprocessor-based architecture, El Segundo,

Calif.-based Teradata is a key part of NCR's plan to introduce massively parallel systems in 1992.

In recent weeks, however, NCR officials have conceded that the System 3600, which will use Teradata-licensed technology, and the System 3700, which will use the fruits of jointly developed NCR and Teradata technology, are a good six months behind schedule.

The hastily arranged merger — talks began late Nov. 29 and

ended early Dec. 2 — led some analysts to call AT&T's acquisition a defensive move designed to keep Teradata know-how off the open market.

"It's a half-billion dollars of insurance to prevent [AT&T/NCR] from being weakened," said Tom L. Nolle, president of CIMI Corp. in Voorhees, N.J.

Other analysts, meanwhile, focused their attention on the delay of NCR's 288-processor 3600 and 1,000-plus-processor 3700 systems, which follows acknowledgment that the firm's cooperative processing architecture — called Cooperation — is behind schedule. The systems are expected to ship sometime next year.

"When you lose six to nine months, you lose momentum," said Steve Widen, senior analyst at Workgroup Technologies, Inc. in Hampton, N.H. He added that by failing to deliver, NCR risked losing the enthusiasm it had created for its leading-edge systems.

However, Teradata Chairman and Chief Executive Officer Kenneth Simonds disputed this observation. "Frankly, the window is just going up. This is a technology and a product that is just beginning to realize its full

potential," he added.

Nevertheless, Simonds said, the merger would help bring a market focus to the advanced products Teradata and NCR are developing.

Tom Gildea, vice president of business information systems at Helene Curtis Industries, Inc. in Chicago, greeted the merger enthusiastically. "I think it's great," he said. "Teradata is a small company with an exceptional product. With NCR's resources, they'll be able to really focus on maintaining their technological lead rather than worrying about quarter-by-quarter results."

Helene Curtis has used Teradata database systems since 1988 and had plans to upgrade to the current top-of-the-line, Intel Corp. I486-based Model 4 next

year. NCR's acquisition of Teradata "will force us to take a closer look" at NCR's 3000 product line, Gildea said.

Tony Bachman, director of IS at the secretary of state's office in Ohio, concurred. Frustrated by a lack of customer service for his two Bull HN Information Systems, Inc. 8000 mainframes, Bachman, who is already a Teradata user, said he is willing to look at the sort of microprocessor-based architectures NCR is advocating.

The merger plan calls for each Teradata share to be exchanged for \$30.25 of AT&T common stock, based on a 20-day average closing price of AT&T common stock. Approval of both companies' boards, the Securities and Exchange Commission and a majority of Teradata's shareholders is still required. The companies said they expect the process to take between two and three months.

At a glance



- ▶ **Founded:** 1979.
- ▶ **Employees:** Approximately 1,600.
- ▶ **Fiscal 1991 revenue:** \$257.8 million.
- ▶ **Customer base:** 160 customers using in excess of 350 systems. AT&T is the largest single Teradata user, with more than 40 systems installed.
- ▶ **Product:** The DBC/1012 Data Base Computer System. The current high-end Model 4 is a parallel processor based on the Intel 486 microprocessors. Teradata's P90, a follow-on computer, was being developed jointly with NCR.



Simonds

CW Chart: Janell Genovese

IBM aims for simplicity in net management software

BY ELISABETH HORWITT
CW STAFF

WHITE PLAINS, N.Y. — IBM unveiled network management software last week that is said to take much of the grunt work and thought out of administering multiple distributed Token Ring local-area networks.

LAN Automation Option (LANAO) targets users who want to economize on the number of operators and the amount of training needed to monitor the physical side of IBM Token Ring LANs, according to Heather Kreger, IBM staff programmer.

The Netview-based product provides some much-needed ease of use to IBM's LAN management offerings, sources said. However, the vendor still has a long way to go before it can compete head-to-head with the management systems that LAN vendors are developing for their own products, according to Robert Lem, a senior associate at Boston Systems Group, Inc., a Boston-based consulting firm.

Searches for problems

IBM's LAN Network Manager currently monitors the Token Ring LAN for problems such as a failed adapter or a lost token, then sends alerts up to Netview, which stores them in a database, Kreger said. However, the process tends to consume the time of experienced operators, he added. LANAO works with Netview and LAN Network Manager — or its predecessor, IBM LAN Manager — to address this problem in the following ways:

- The product automatically intercepts alerts from LAN Network Manager and displays

them as color-coded, time-stamped messages on a Netview terminal screen. Without LANAO, an operator must periodically search the Netview database for crucial LAN alerts. To get timely news of a problem, the operator must sit in front of a screen and watch a series of coded messages flow by, picking out the key events.

- Once a problem has been identified, LANAO periodically checks on the progress of fixing it and reports back when the device is back on-line.
- The program can periodically check to make sure that all LAN devices listed as active in the Netview database are actually up and running.
- A topological display gives the operator a quick view of the status of all devices on the network.
- An abbreviated command set for executing LAN management tasks from Netview eliminates the need to type in long resource names.

LANAO seems tailored to users such as Randy Condon, a LAN analyst at Hills Bros. Coffee, Inc. who recently complained that IBM's LAN management products are too clunky and mainframe-oriented. "LAN Network Manager is Netview, only crunchy," he said.

The above LANAO features directly address two of Condon's chief complaints about Netview-LAN Network Manager: the difficulty of sorting out key alerts from an overabundance of incoming data and the inability to track a problem, such as a dropped token, to its resolution.

LANAO/MVS Version 1 is available now, priced at \$7,000 for the basic version.

Apple backs off from FDDI-II support

BY JOANIE M. WEXLER
CW STAFF

SAN DIEGO — Multimedia evangelist Apple Computer, Inc. has reportedly backed away from supporting the only high-speed local-area network designed to deliver integrated services to the desktop.

The American National Standards Institute (ANSI) committee on Fiber Distributed Data Interface (FDDI) will address the effects of Apple's about-face on FDDI-II support along with other technological hurdles at a meeting here this week.

Apple, which declined comment, would be a prime candidate for supplying the technology because of the audio capabilities of its Macintosh workstation and because the Macintosh's upcoming version of Operating System 7 is slated to support video.

One standards committee member chalked up Apple's renegeing on its support to an ailing U.S. economy that limits vendor endeavors to core products. Another pointed to the downside of vendors' funding technology that becomes standard, thus footing the bill for competitors to enter the market.

FDDI-II has been honed as the optimal LAN for handling time-sensitive traffic, such as

voice and video, alongside data on a 100M bit/sec. FDDI LAN. It has been under construction in parallel with FDDI and is the only LAN geared for isochronous traffic — that which must be timed to a standard clock, said Floyd Ross, vice chairman of the ANSI committee.

citing potential "legal ramifications." However, several off-shore chip makers are said to be developing FDDI-II technology.

FDDI-II could be used to extend the delivery of integrated services from a T1 or Integrated Services Digital Network wide-area link directly to the desktop, suggested one vendor who said he would like to get his hands on the chips to build a T3-to-FDDI-II multiplexer. However, "without chips, FDDI-II is dead in the water. There aren't too many of us willing" to fund FDDI-II alone, he said.

The FDDI-II hang-up, if resolved quickly, might not interfere with user network requirements because most firms are not very far along in bringing integrated services to the personal computer.

"We are trying to figure out how to deliver multimedia to the desktop, and isochronous capabilities are an important part of that," said Ken Starkey, associate director of communications at Bear, Stearns & Co. in New York. "We're certainly curious about FDDI-II, but we might not use it for several years."

Standard chip sets for FDDI-II are nearly complete, and many chip makers, including FDDI-II pioneer AT&T Semiconductor, reportedly had plans to manufacture the sets in volume until Apple demand dried up.

An AT&T Semiconductor spokesman would not comment on its relationship with Apple,

FDDI-II fundamentals

- Adds voice and video to an FDDI LAN.
- Does not displace FDDI networks.
- Standards for chip sets nearly complete.

FDDI-II roadblocks

- Withdrawal of system vendor support.
- Neophyte network management.

CW Chart: Janell Genovese

'Child porn' sent on America On-Line

Transmission raises censorship, liability issues for nervous bulletin board owners

BY CHRISTOPHER LINDQUIST
CW STAFF

VIENNA, Va. — The alleged transmission of child pornography is the latest wave to rock the increasingly sensitive electronic bulletin board boat as information services provider America On-Line last week found itself mired in controversy.

Yet the recent spate of incidents surrounding materials and ideas transmitted across public bulletin boards — including Quantum Computer Services, Inc.'s America On-Line, IBM's Prodigy and CompuServe, Inc.'s CompuServe — does not seem to have spurred any private or industry groups or government bodies to take a deeper look into the overriding issue: whether information services companies need to be more self-regulatory or whether Congress should legislate acceptable modes of operation.

In the meantime, there is concern that if public electronic-mail service operators are held liable for the messages transmitted within their borders, fear of legal action would cause most firms to close their services.

"As a practical matter, if you held them liable, everybody would get out of the business," said Mike Godwin, staff counsel at the Electronic Frontier Foundation (EFF) in Cambridge, Mass.

Right to determine

A survey of experts last week indicated that many legal observers believe these service providers have the right to determine what can and cannot be sent across their communications lines. Meanwhile, a decision handed down in a recent court case may ease some of those concerns and help keep America On-Line free of any legal problems.

The federal court decision in *Cubby v. CompuServe* supported CompuServe's contention that it was not responsible for libelous messages sent on its service. The ruling may help define the now nebulous role of electronic service providers, according to Godwin.

The court determined that CompuServe was more like a bookstore than a publisher and that while it could either carry a specific forum or not, it was not responsible for the content of messages posted within that forum.

This was one of the first rulings to directly impact the fuzzy realm of electronic communication and how it should be treated under the law.

The alleged transmission of child pornography came to the attention of America On-Line after a subscriber, Roger Dietz, reportedly contacted several newspapers and television stations with claims that unsolicited pornographic photos of children had been sent to him electronically via private E-mail on the service.

Liz Sara, a spokeswoman for America On-Line, said the service provider had contacted both the Federal Bureau of Investigation and Dietz with the intent of working with them to resolve the issue.

Sara indicated that the company expected the FBI to obtain a warrant to search the files of the suspected source of the pornographic material in the near future.

Like Prodigy and CompuServe, America On-Line ordinarily maintains a policy of not monitoring private E-mail or "message rooms" such as the one to which the photos were allegedly transferred. That policy will not be changed, America On-Line President Steve Case said.

"The phone company is legally obligated to not listen in to their service," Godwin said. "If you're a public information service provider, you can't go inspecting stored messages for illegal material."

However, according to Sara, public

message areas or "auditoriums" are monitored by employees who can act immediately to cut access to offending subscribers. In seven years, this step has never been taken, she said.

Prodigy monitors postings

Godwin said that while CompuServe insulated itself from liability by not monitoring any messages, services such as Prodigy, which monitors all public postings for content suitable to maintaining a "family environment," are opening themselves up

to lawsuits and liability.

At least one attorney, Robert Ellis Smith, publisher of the "Privacy Journal" in Providence, R.I., said he believes electronic services would be better off as publishers.

If they were treated as a utility, such as the phone system, they would be subject to government regulation and would have to be open to anyone. Such a situation could render it impossible for the providers to target specific markets, according to Smith.

"If these systems are open to everybody, it's quite possible one segment could take it over," Smith added. A company such as Prodigy, which bills itself as a "family" service, may not want to take that risk.

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NEWS SHORTS

Sale rumors nudge Unisys stock

Unisys Corp. stock reacted suddenly to an unconfirmed published report last week that a consortium had been formed to acquire the debt-troubled firm. Last Monday, Unisys stock closed at 5½, up 1¾, then settled back down to 4¾ at press time Friday. "The movement in the stock clearly was a response to the *USA Today* article," said a Unisys spokesman, declining to comment further. Several Wall Street analysts said last week that Unisys may have turned a corner. They predicted the Blue Bell, Pa.-based company would show a profit for the fourth quarter and a year-end profit in 1992.

X marks spot on DEC window

Digital Equipment Corp. is expected to announce a family of X Windows Terminals today. Dubbed the VXT 2000 series, the line will consist of seven products, each offering a resolution of 100 pixels and a flicker-free refresh rate of 72 Hz. The VXT 2000s will use local X terminal client applications to reduce the demand for host and network resources while implementing distributed computing, the vendor said.

Comdisco defense loses round

The Delaware Superior Court last week denied Comdisco, Inc.'s motion to dismiss the reconfiguration practices suit filed against it early this year by IBM and its leasing subsidiary, IBM Credit Corp. (ICC). IBM and ICC maintain that the practices cited in the suit amount to stealing. The court found six of the seven counts in the complaint worth exploring; the case now goes to discovery and from there to trial.

Desktop messaging goes cellular

Oracle Corp. and McCaw Cellular Communications, Inc. in Kirkland, Wash., formally disclosed a joint venture last week to develop a high-speed data-transmission service for PC users. The data service will be tested in key cities in the first quarter of 1992 and could be available by 1993. It will operate over cellular telephone frequencies and could cost one-tenth what transmission through telephone wires or FM sideband techniques costs, an Oracle spokesman said.

SPA settles six more suits

The Software Publishers Association (SPA) said it has settled six copyright infringement suits. Four of the defendants, the Seattle-based and interrelated Security Properties, Inc., Security Management, Inc., Security Property Investments, Inc. and Highland Capital, Inc., agreed to pay a total of \$100,000 to settle the claims. In addition, IPL Systems, Inc. and Entrix, Inc. will pay \$90,000 and \$100,000, respectively, to end their suits. The SPA has filed more than 100 such suits.

Eco-aware Northern Telecom feted

Northern Telecom, Inc. received an award last week from the U.S. Environmental Protection Agency at the CFC and Halon Alternatives Conference in Baltimore. The vendor was reportedly honored for following through on a 1988 commitment to eliminate ozone-depleting chlorofluorocarbon (CFC) solvents from its 42 global manufacturing operations. Northern Telecom said the CFC solvent cleaning process alternatives it has developed should prevent the release of nearly 9,000 tons of CFCs into the atmosphere during the next eight years.

Think nationally, act locally

Fredrick Wang, son of the late Wang Laboratories, Inc. founder An Wang, has been stumping for Democratic Presidential candidate Paul Tsongas. The ex-Wang president recently hosted two fund-raisers for the former Massachusetts senator, who is also a director on Wang's board. Separately, Wang said it has licensed its single in-line memory module technology to PNY Electronics, Inc. PNY is the fifth company to receive a SIMM license after Wang's win in a patent infringement case against two Japanese firms.

More news shorts on page 91

IBM, Bull mull over RISC deal

Bull CEO's resignation from Mips board fuels talk of ACE defection

BY KIM S. NASH
CW STAFF

PARIS — Groupe Bull and IBM are reportedly discussing a reduced instruction set computing (RISC) alliance that, if consummated, could force the French firm's defection from the Advanced Computing Environment (ACE) workstation consortium.

Fueling the reports was the low-key May resignation by Bull Chairman and Chief Executive Francis Lorentz from the board of Mips Computer Systems, Inc., a primary mover behind the ACE alliance. Lorentz resigned "to devote more time to Bull," according to a Bull spokesman.

Bull's OEM relationship with Mips, under which Bull sells a RISC system, the DPX/2 Model 510 line, based on a Mips processor, reportedly remains intact.

Bull may be hedging its bets regarding ACE because of recent reports of splintered relations among group members and delayed delivery of Mips' RISC chip, which will make timely product deliveries uncertain, said Bill McCusker, computer center director at Citrus College in Glendora, Calif.

McCusker, who runs a Bull DPS/8 Model 484 minicomputer, cited rumors that The Santa

Cruz Operation may also quit ACE. An SCO spokeswoman denied this, saying the company is "quite committed to ACE" and holds weekly conference calls with other members.

Whither DEC?

Digital Equipment Corp., another ACE supporter, recently introduced machines with its own RISC chip, prompting observers to say DEC has undermined ACE, which is not expected to produce market-ready products until well into next year [CW, Nov. 25].

Meanwhile, Bull has reportedly discussed RISC-related deals with "several" other players during the past few months, but no contracts have been signed, the spokesman said. Neither IBM nor Bull would confirm whether the two companies are contemplating an alliance.

All of the firms to which Bull has spoken are members of the Open Software Foundation (OSF), which promotes Unix operating system standards and of which Bull is a co-founder, the Bull spokesman added.

While both ACE and OSF stump for systems interoperability, ACE does it from the hardware side, while OSF focuses on software. Users and observers

appeared to care little whether Bull remains a part of the 250-member ACE consortium, as long as the company stays on the open systems track.

OSF is more important to Bull than a young, tenuous ACE because OSF is a stronger player in the open systems movement, ac-

BULL MAY BE hedging its bets regarding ACE because of reports of splintered relations among members.

cording to McCusker.

"It has standards out there that Bull can incorporate into its products immediately, but ACE is an undeveloped act in what will be a long, long open systems play," McCusker said.

In March, Bull adopted OSF's Distributed Computing Environment standard, called the Distributed Computing Model, on which to base its strategy for building interoperable hardware and software. The model includes products such as tools for making Bull mainframes interoperable with Unix machines.

EPA official: Halon phaseout to accelerate

CONTINUED FROM PAGE 1

Some users have already steered away from halon systems. CSX Corp.'s new data center in Jacksonville, Fla., depends primarily on a dry sprinkler system and uses halon only in a few high-risk areas [CW, Aug. 13, 1990], according to facilities manager John Mangum.

The halon phaseout, the high cost of replacing halon and a variety of other factors led CSX Technology, the information systems arm of the transportation company, to minimize the use of the gas, he said.

J. Andrew Wilson, chief of the Fire Protection Division at the Smithsonian Institution in Washington, D.C., said there has been a trend away from halon systems in computer rooms for the last 10 years but not just because of the ozone problem. Halon systems are prone to accidental discharges (compared with sprinklers), and there is little backup if the fire is not extinguished by the single discharge of halon, he said.

However, many halon users resist the idea of water spraying down on their computer room. "Personally, I'm not convinced yet that water is a good alternative. I'm concerned about mini-

mizing downtime," said Doug Viehweg, computer operations manager at the U.S. Department of Agriculture's data center in Kansas City, Mo.

Users need not rip out their halon-based systems, but they should consider alternative systems when they change or build new data centers, said Gary Taylor, a fire protection consultant

Simple steps such as removing printers, paper and paper dust from the computer room and putting a fire wall around it can greatly reduce the fire risk, he added.

Even after the production phaseout, there will be enough halon stored in various systems around the world to provide the halon needed for essential, life-

MANY DATA CENTERS can get an acceptable level of fire protection from a combination of early-warning detection systems, fast-response sprinklers and carbon dioxide systems situated under the computer floor and inside cabinets.

based in Willowdale, Ontario. Halon will soon become a scarce, expensive and highly regulated commodity, he predicted.

Taylor said many data centers can get an acceptable level of fire protection from a combination of early-warning detection systems, fast-response sprinklers and carbon dioxide systems situated under the computer floor and inside cabinets [CW, July 3, 1989].

critical applications, said Taylor, who was co-chairman of a U.N. committee on halon.

This distributed "halon bank" will have to be carefully managed so that halon from deactivated systems is recycled and provided to users with critical needs, he said. "For example, if you go from a mainframe data center to local-area networks of PCs, the halon goes back to the bank," Taylor said.



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Novell, Stratus team to bring fault tolerance to PC networks

BY JIM NASH
CW STAFF

Novell, Inc. last week continued its strategy of marching across the desktops of Fortune 500 firms by disclosing a deal to piggyback Portable Netware onto Stratus Computer, Inc. fault-tolerant systems.

Running Netware on Stratus' systems is expected to appeal to a narrow but powerful customer base: users with heavy on-line transaction processing demand. The

alliance could also give Novell weaponry to add to its fault-tolerant arsenal.

For Stratus, a Marlboro, Mass.-based maker of midrange and mainframe computers, Netware support will abet plans to position its XA2K hardware as network file servers. Both Stratus and Novell said Netware will be ported to the fault-tolerant Stratus XA 2000 and XA/R Continuous Processing Systems. Stratus added that it will integrate Portable Netware as a service on both its Unix System IV-

based operating system and its proprietary operating system, VOS.

David Burns, manager of workstation integration at Stratus, said Netware should be available on the Unix system late next year and on VOS during the first half of 1993.

In October, Novell and Sequent Computer Systems, Inc. announced a similar deal to port Portable Netware to Sequent's Information Server. The Sequent port is slated for shipment next month.

If these partnerships are successful, information systems managers should gain another avenue for tying their big iron into personal computers. "We have no PC networks," said Angelo Casciato, director of computer operations at regional retailer Joseph B. Dahlkemper, Inc. But the

idea of teaming the XA 2000 Model 120 with a Netware network for transaction processing was appealing, Casciato said.

A Novell spokesman said products emanating from the Stratus venture will complement Novell's System Fault Tolerance (SFT) Level III product scheduled for beta testing next month.

Netware product marketing director John Edwards said SFT Level III is aimed at desktop operations. Stratus systems make computer operations at the mainframe level redundant.

The firms have pledged to expand fault tolerance even further into the desktop world. IS managers said that one logical step would be to duplicate the wiring itself so that any break in one would automatically trigger transmission on the other.

Employees on PC networks would have tighter integration with Stratus computers. IS managers, on the other hand, could replace dumb terminals and terminal emulation software now imposed on PC users wanting to access databases running on Stratus hardware.

However, a maximum of 256 users could use Stratus computers as a Netware file server. This will change when Novell ships Netware 1000, Stratus said.

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Dell 486 models erode 386 prices

BY CAROL HILDEBRAND
CW STAFF

AUSTIN, Texas — Dell Computer Corp. added firepower to its upgradable arsenal and chiseled more mortar from personal computer price underpinnings with the announcement of three new Intel Corp. I486-based models.

The moves signal a further erosion of pricing for 80386s and a more dramatic price dive for the 486, said John Dunkle, an analyst at Workgroup Technologies, Inc. in Hampton, N.H. The Dell System 486P series features processor upgradability at prices lower than the company's current upgradable series based on the Intel 80386DX chips.

The System 486P/20 and 486P/25 each feature a small-footprint chassis and incorporate 20- and 25-MHz 486SX chips from Intel, respectively.

The System 486P/33 features a 33-MHz processor. Pricing starts at \$1,999 for the 486P/20 and extends to \$2,299 and \$2,899 for the 486P/25 and 486/33, respectively.

Dunkle said Dell's introduction of the 486 family at a price point lower than that of the 386 series signals more trouble for the saturated 386 market and lower prices for the 486 market. With most major vendors' 486 products still in the \$4,000 range, Dunkle predicted a 22% to 27% price cut during the next six to eight months.

Dell is placing its bets on high-end color in the notebook sector and upgradability in the desktop arena, Dunkle said. He added that he thinks the company's strategy is a strong one.

"Dell is in the catbird seat," he said. "They have no excess baggage of dealer channel conflict, and they can continue to make core products available through direct mail and extend the high end of the system to high-end VARs and integrators," he added.

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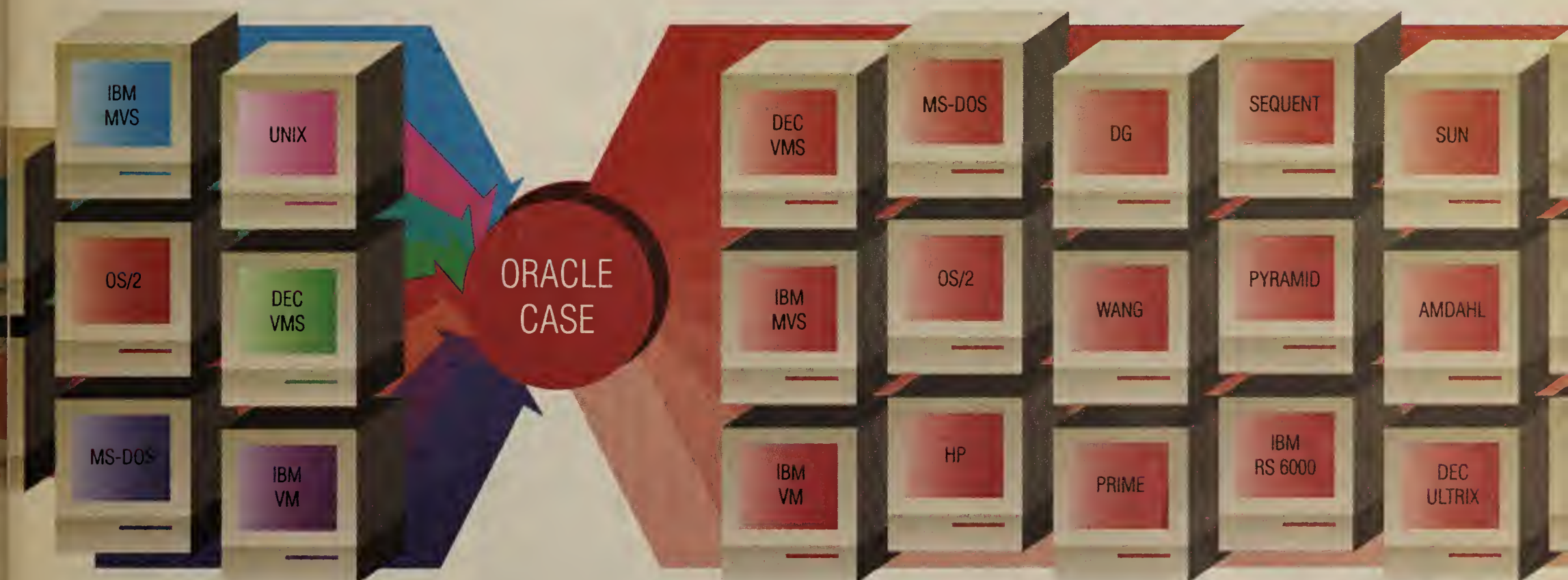
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BT starts up frame relay to Europe

BY JOANIE M. WEXLER
CW STAFF

SAN JOSE, Calif. — The first telecommunications carrier to put frame-relay technology on international lines did so last week, managing to recruit a couple of cautious customers who are still hedging on long-term commitments.

BT North America, Inc. has announced the general availability of its international Expresslane frame-relay service, which links sites in the U.S., UK and France. The company said it will add the service in the Netherlands and Germany

during the first quarter of 1992 and is looking at near-term expansion to the Pacific Rim.

The carrier has signed up Teradata Corp., a relational database developer based in El Segundo, Calif., and Delran, N.J.-based Datapro Research, Inc. as Expresslane customers.

Both companies said they need frame relay — a fast form of packet switching well-suited to handling bursts of data traffic — for interconnecting global local-area networks.

However, until the fruits of BT's service are fully proven and market prices

stabilize, both users said they will pilot the service on a month-by-month basis.

"I would advise anyone considering frame relay not to sign a long-term contract, as [overall market] pricing will be stabilizing in about six months," said Mark Heil, senior network specialist at Teradata.

Heil said he signed up for Expresslane because he has to "immediately install" a LAN in his company's London office, and "BT is the only carrier that can get you out of the country" with frame relay.

Datapro said it is looking to beef up response time on its 8-month-old BT X.25

network and support a new LAN connection in London.

"We're getting about a four times slower response time than we'd like," noted Paul Mullen, director of database operations at the research firm.

Waiting for Ethernet

Financial services firm Frank Russell Co. in Tacoma, Wash., is an existing global BT X.25 customer that plans to sign up for BT's global frame-relay service after it gets its Ethernet LAN infrastructure in place over the next six to eight months.

"At very little incremental cost, we will jump from 9.6K bit/sec. to 56K bit/sec. speeds. That's kind of a no-brainer to sell to management," said Bill Branson, senior systems analyst at the firm.

Flat monthly Expresslane pricing ranges from \$2,700 per worldwide LAN connection for traffic originating in the U.S. to \$4,100 for France-based traffic. Prices include local access charges.

Branson's company will be looking to link Ethernets in Tacoma, London, Tokyo, Toronto and Sydney, Australia. A potential stumbling block for such globally expanding firms is the varying condition of communications links in foreign countries, said Rosemary Cochran, a principal at Dedham, Mass.-based consultancy Vertical Systems Group.

Frame relay, a simpler protocol than X.25, presumes the clean, reliable communications links such as those provided by the fiber and high-grade copper prevalent in the U.S., UK and France. BT said it will eventually gateway Expresslane to its X.25 service in countries without frame-relay-quality facilities.

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Borland, Next directors depart

BY JAMES DALY
CW STAFF

Board resignations surfaced throughout the industry last week as both Borland International, Inc. and Next, Inc. revealed the departures of longtime directors and well-known industry figures.

Borland director and venture capitalist Benjamin Rosen resigned, citing an increased work load. Rosen, who is chairman of the board at Compaq Computer Corp., is a general partner at Sevin Rosen Management. He had been a director at the Scotts Valley, Calif.-based software maker since 1987, when Borland acquired Paradox Software, Inc. His relationship with Borland, however, goes back to 1984, when he served as chairman of Ansa Software Co. during its acquisition by the developer.

Meanwhile, Next revealed last week that H. Ross Perot resigned from its board in June. No announcement was made at the time because the Redwood City, Calif.-based firm is a privately held company. Perot was not available for comment, but a Next spokeswoman said he needed to devote more time to his company, Perot Systems Corp.

The resignation will not affect his investment in the firm, she added. Additional board members will be named next year. The Perot resignation leaves Steve Jobs as the sole board member of the company he founded after leaving Apple Computer, Inc.

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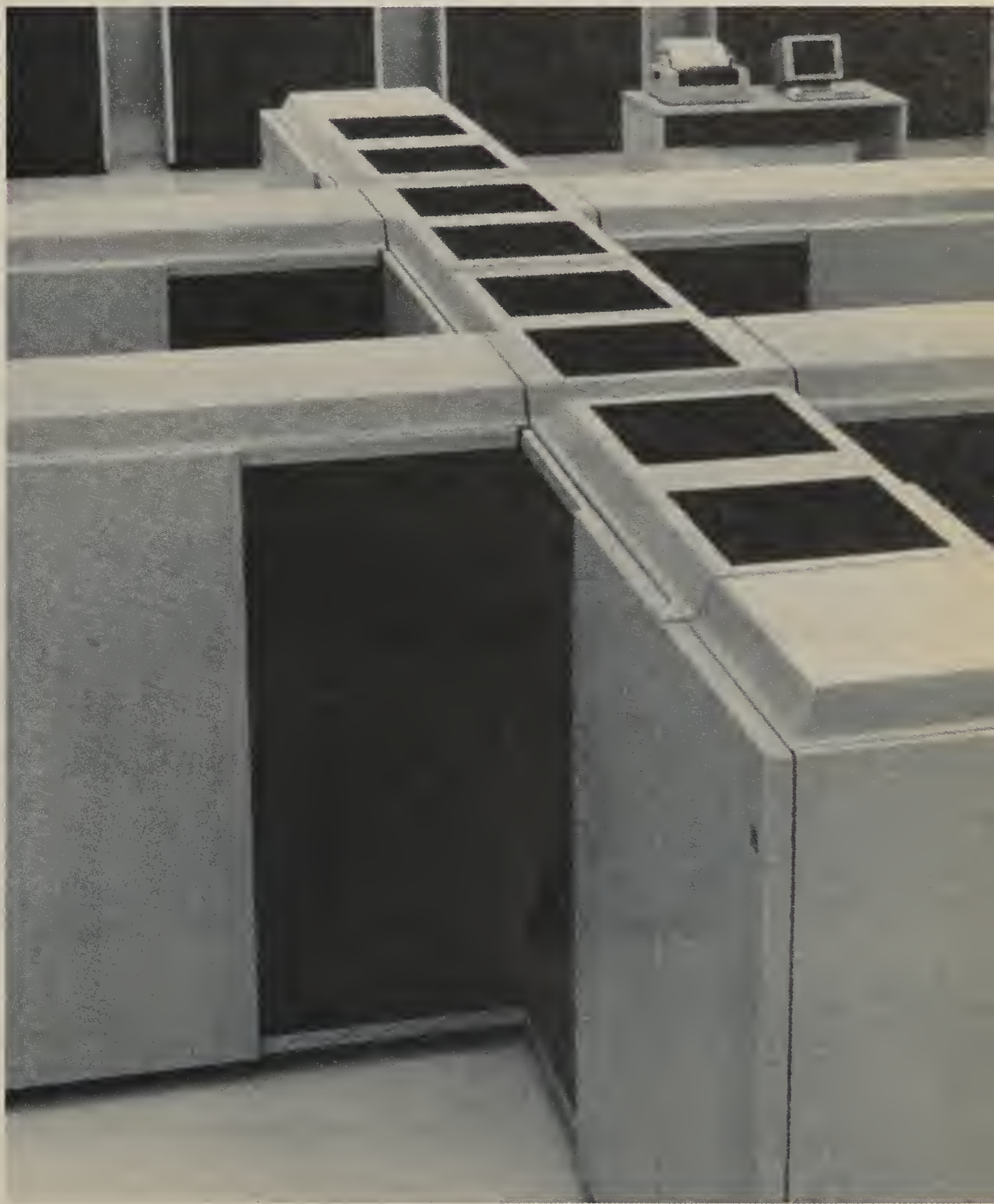
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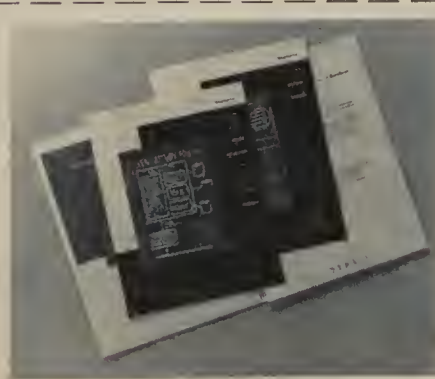
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Cincom deal adds GUI tool to developer's kit

BY JOHANNA AMBROSIO
CW STAFF

CINCINNATI — Cincom Systems, Inc. inked a deal last week to sell development tools that are said to allow users to write applications with graphical front ends.

The tools, from Gupta Technologies, Inc. in Menlo Park, Calif., include Quest, which allows users to access data from SQL databases; SQLwindows, a graphical development system for applications that run under Microsoft Corp.'s Windows 3.0; and network gateway and communications software.

Cincom will sell and support the Gupta

software. It will also integrate the Gupta tools into its Supra database and its Mantis and AD/Advantage mainframe-based development systems. The deal gives Cincom users faster access to graphical user interface (GUI) technology they might not have received quickly from Cincom otherwise, even though the Gupta tools may divert some revenue from Cincom's existing tool lineup, analysts said.

"To be a viable tools vendor, you need to address both the character-based and the GUI worlds," said Ed Acly, an analyst at Technology Investment Strategies Corp. in Framingham, Mass.

The Gupta alliance is part of Cincom's

strategy to sell more Supra licenses on machines other than mainframes; currently, some 80% of Cincom's revenue is from host-based software, said Tom McLean, vice president of Cincom's System Software Division. It is especially critical for Supra to keep up with the downsizing trend because the database management system alone accounts for over half of Cincom's revenue, he added.

As such, Cincom will emphasize the fact that Supra can run on a variety of different hardware platforms, including Digital Equipment Corp. VAXs under both VMS and Ultrix, personal computer platforms such as DOS and OS/2 and Unix

versions including IBM's AIX.

"The Gupta alliance adds a piece to our overall application development tool kit, the piece for GUI-oriented applications for the LAN," McLean said.

So far, no Cincom users have signed up for the Gupta wares, he said, but much of the short-term revenue is expected to come from "mainframe Supra users who want to add LAN-based applications."

Software AG backs off OS/2

BY KIM S. NASH
CW STAFF

BOSTON — In a blow to IBM, Software AG last week revealed that its 15-month-old client/server strategy, named Entire, is no longer tied to OS/2 but is now centered around Microsoft Corp.'s Windows.

The Darmstadt, Germany-based company said its decision to jettison OS/2 as its client operating system of choice was linked to the environment's paltry installed base.

Changing gears at a company best known for mainframe software and for late product deliveries will not be easy — or quick, users and analysts said.

"They should have had their stuff running on workstations three or four years ago. They've had the know-how for a long time, but we haven't seen any products," said Clayton Clendinen, database administrator at Orlando Utilities Commission in Orlando, Fla. "After more than a year, you'd think there would be more products out," he added.

Aiming straight

Entire's aim is straightforward: to make all applications, no matter what kind of hardware hosts them, have the same look and feel to personal computer and workstation users. At a press conference here, Software AG announced a few ready-to-ship Entire client/server development tools and demonstrated several more that it plans to make available during 1992. Among those scheduled for release in the next few weeks are Unix and Windows versions of its Adabas relational database management system and a Windows edition of Natural, a fourth-generation language.

All applications written in the Windows version of Natural will be portable across Unix, OS/2, DOS and IBM mainframe and Digital Equipment Corp. VAX environments, according to Peter Page, the newly appointed chairman of Software AG's North America Division.

"With this communication across platforms, users will be able to get at information no matter where it is," Page said.

Although Windows is the primary operating environment for Entire clients, Software AG will continue to provide products for other operating systems. The company, for example, recently acquired SQL-DB, a low-end Unix RDBMS, from Siemens/Nixdorf Informationssysteme AG. It will be Software AG's first database for PCs and workstations.

"The crux is getting it all to work," observed Peter Feakins, manager of applications development at Chicago-based Schwinn Bicycle Co., which has used Software AG products for nine years.

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SYBASE	NO

Automatically Activated Two-Phase Commit

Eliminate data loss or duplication in distributed networks. Only an automatic two-phase commit ensures that all remote changes are synchronized, without pages of polling and verification code.

InterBase	YES
ORACLE	NO
SYBASE	NO

Modular, Sequenceable Triggers

Only triggers in the data dictionary ensure that business rules (integrity) are consistently enforced, regardless of the application. Modular triggers maximize programming productivity and reliability.

InterBase	YES
ORACLE	NO
SYBASE	NO

B O R L A N D
Software Craftsmanship

Application backlogs.



If development's at a stand

In two or three years your company will have changed, your markets will be different, your competitors will be using new tactics, and the applications you needed today might be ready.

So it goes with software development. Most large projects are backed up so long, by the time an application is new, it's old. Worse, it may not even be what was asked for in the first place.

This dilemma is anything but acceptable, so IBM has launched a major effort to speed things up. Working with leaders in CASE technology, we're building a new framework called AD/Cycle™ that's giving the entire development cycle something it never had before;



still, how fast can the rest of your business go?

uniform standards for streamlining the process from start to finish.

AD/Cycle also includes a host of new tools, both from IBM and our business partners: CASE tools for planning, analysis and design, languages, generators, plus testing and maintenance tools, all with a structure for coordinating their efforts.

And to help executives and programmers think more alike, AD/Cycle offers advanced methods for sharing information so that everyone can work on the same wavelength, so the end product will be right.

Over 60 AD/Cycle products are available today, and scores of CASE vendors have signed up for AD/Cycle.

Which means it's already gaining acceptance as a standard for application development, and much more is on the way.

Companies like Eastman Kodak, Phillips Petroleum, USAA and Continuum are now using AD/Cycle tools with good results. Clearly, the sooner you get started the better, and there's plenty to start with now.

The roots of today's backlogs are many, but the biggest culprits have been a lack of standards and direction—the very ills that AD/Cycle is designed to cure.

For more information about our growing family of AD/Cycle products call 1 800 IBM-CALL, ext. 822.



ADVANCED TECHNOLOGY

TECH TALK

Big picture on imaging

Image processing will be the dominant computing application of the 1990s, thanks to improved performance and lower prices, according to a new report by Electronic Trend Publications, a market research firm. Worldwide revenues for all image processing systems are expected to exceed \$11.6 billion by 1995, a 45% increase over the past 10 years, the firm reported. The major applications will include document image processing, medical imaging, industrial automation, earth resources, electronic publishing, science and visualizations and videoconferencing.

As easy as uno, dos, tres

Telefonica de Espana SA, Spain's national telephone company, is preparing to launch the world's first Spanish-language speech-recognition system. Any caller in the nation of 39 million people will be able to access business information simply by dialing a toll-free number and saying "uno," "dos" and "tres" into the telephone in response to recorded prompts. The speech-recognition system was developed at AT&T Bell Laboratories, whose scientists worked with Telefonica to acquire speech recordings and refine the system for speakers of all Castilian accents. An AT&T Spain intelligent network system will recognize speech and send the data to the network for connection to the desired service.

Update on a workbench

Cornell University's Theory Center's Scientist's Workbench, a graphical user interface and computing tool, was recently adapted to meet the needs of Synthesis: A National Engineering Education Coalition. The group of eight engineering schools includes Tuskegee University, University of California at Berkeley, Iowa State University of Science and Technology and five other educational institutions that aim to improve engineering education.

Is there a doctor in the network?

HP system brings brain waves, surgical video and sound to neurophysiologists off-site

BY MICHAEL ALEXANDER
CW STAFF

The University of Pittsburgh Medical Center — one of the world's top neurosurgery and research centers — will inaugurate this week a multimedia network that will permit neurophysiologists to assist in operations from a remote workstation.

The network, dubbed Neuronet, will transmit computer data, voice and video from operating rooms to Hewlett-Packard Co. Apollo Division workstations, according to Dr. Robert Sclabassi, professor of neurological surgery at the university. He holds graduate electrical engineering and medical degrees.

"We have combined voice, video and computer data with the idea of providing a real-time consultation service," Sclabassi said.

Neuronet will link instrument racks in operating rooms to 110 HP Apollo 9000 Series 700 workstations at the seven hospitals that make up the medical center.

"In complex brain operations, surgeons often encounter complications that require the assistance of a colleague," Sclabassi said. "If the colleague was at another hospital, he or she would have to literally run to the operating room to scrub up and take a look. With this advanced network, a doctor will be able to walk to the closest computer terminal and attend the operation." The network will enable a physiologist to assist simultaneously in several operations if needed.

Brain-wave monitoring

Neuronet will be used to transmit the brain-wave activity of patients undergoing neurosurgery in an operating room to a workstation. A neurophysiologist monitors the brain-wave activity



Neuronet allows neurophysiologists to remotely advise surgeons performing complex brain operations

to determine whether a surgical procedure is causing unseen harm to the patient's nervous system and relays that information to the surgeon performing the procedure.

A reading of brain-wave activity can often indicate what effect an operation has on the nervous system more readily than a visual inspection, Sclabassi said. The neurophysiologist provides feedback to the surgeon who may then adopt an alternate surgical strategy.

The physiologist will be able to see what the surgeon is seeing through his microscope during surgery as well as visually scan the operating room. Two-way voice communication will allow the physiologist to hear what is being said in the operating room as well as communicate with a neurotechnician.

"We'll be handling the video as analog but ultimately hope to go to digital video," Sclabassi said.

A digital video system would enable

the physicians to make decisions about the boundaries of tumors, enhance images and manipulate them in a variety of other ways.

Neurosurgeons are constantly visualizing in their minds a patient's anatomy in three dimensions as they operate, he said. Medical animation software that creates 3-D images using scans from magnetic resonance imaging systems and other equipment will enable the surgeons to do the same on workstations.

The main objective of the broadband network is to reduce damage to nervous systems, thus improving the patient's chances for recovery, Sclabassi said. The patient spends less time in recovery and rehabilitation, thus lowering the cost of his health care.

"The idea for the network stems from the desire to reduce morbidity and have better surgical outcomes," Sclabassi said.

U.S. trails in commercialization of tiny tech

BY MICHAEL ALEXANDER
CW STAFF

U.S. research and development in miniaturization technologies is the best in the world, but U.S. companies lag behind their foreign counterparts in commercializing the fruits of their efforts, a report released recently by the congressional Office of Technology Assessment (OTA) said.

Miniaturization technologies such as microprocessors create new markets and contribute billions of dollars to the gross national product, noted the *Miniaturization Technologies* report. For example, the microprocessor led to the founding of the personal com-

puter market, currently valued at \$70 billion per year, the OTA said.

The trend to ever smaller electronics, sensors and other devices does not appear to be slowing, the OTA said. Transistors will continue to shrink, allowing semiconductor memory makers to pack as many as 1 billion transistors on a chip within a decade. By then, the smallest feature on a chip will be 0.1 micron (four millionths of an inch). By contrast, today's most advanced chips have features of 0.8 microns and hold between 4 million and 16 million bits of data.

Experts are unsure if miniaturization can continue after the advent of 1 billion-transistor chips. Some feel the current silicon technology will not work at dimensions smaller than 0.1 mi-

crons. However, others contend that research into quantum and molecular electronics will continue the trend of microscopic miniaturization.

Semiconductor manufacturing technology is being applied to other fields to create new capabilities and applications, the OTA said. For example, several companies around the world are developing chemical and biological sensors using techniques used to make integrated circuits, the report said.

Last, the OTA noted that the trends in miniaturization are forcing the electronics industry to improve packaging. As the costs of integrating more transistors onto the same piece of silicon increase, multichip modules and surface-mount technologies will become more attractive, the OTA concluded.

Five terms and conditions that could save you millions on your next lease

Recent events in the leasing industry have shown that companies can no longer select a lessor based solely on lease rate. The terms and conditions of your agreement are now key considerations in determining your true long-term costs and hardware flexibility.

Without flexible terms and conditions, your computer hardware options can be severely restricted when it comes time to upgrade or replace your equipment during the lease term. The question is: What can you do to protect yourself?

First, look closely at the leasing company you choose. Second, look even closer at your lease terms and conditions. And third, know your rights.

Following are some of the suggested rights you should consider when negotiating your next lease agreement.

1 The right to add new, used, or third-party upgrades with or without financing from the original lessor.

If your lease makes it difficult to seek competitive upgrades, your only alternative may be to upgrade through the original lessor — at prices they dictate.

But if your lease gives you the flexibility to install new, used, or third-party upgrades from the vendor of your choice, you can decide which equipment to acquire, from whom — and at a price that's right for your budget.

2 The right to reconfigure subleased equipment.

Most leasing companies say they will allow you to sublease. But, with a little digging, you may discover they will only

allow you to sublease if the system isn't reconfigured. This is an inconvenient, impractical, and unnecessary request, especially if you're only seeking a memory upgrade.

The right to reconfigure subleased equipment is not only reasonable, but necessary if subleasing is to be a practical, economical alternative for you.

The fact is that upgrade expenses, not the rate of your lease, are likely to have the biggest impact on your overall costs. And if your lease has restrictive upgrade terms and conditions, it could end up costing you far more than any initial lease-rate savings. In some cases, millions of dollars more.

3 The right to sublease to other leasing companies.

Your lease agreement may state that your lessor will not "unreasonably withhold" its consent to allow you to sublease. But some lessors consider it reasonable to restrict your subleasing rights to end users only. They don't want independent leasing companies handling their equipment because, ultimately, convenient subleasing helps keep prices down.

Unless you have the time, resources, and skills required to remarket your equipment directly to end users, you should negotiate the right to sublease to other leasing companies.

4 The right to return systems with like parts at the end of the lease.

The leasing industry has long recognized that parts are *fungible* —

interchangeable — with other parts from the same manufacturer bearing the same part number.

You are the direct beneficiary of parts fungibility: leasing companies discount their upgrades because of the remarketing revenues they receive from parts removed during reconfiguration.

Without this right in your lease agreement, you may be forced to return your system at lease-end with the *exact* serial-numbered parts with which it was originally

configured. Your upgrade costs could be much greater.

5 The right to call Comdisco for our free lease-negotiation guide and white paper.

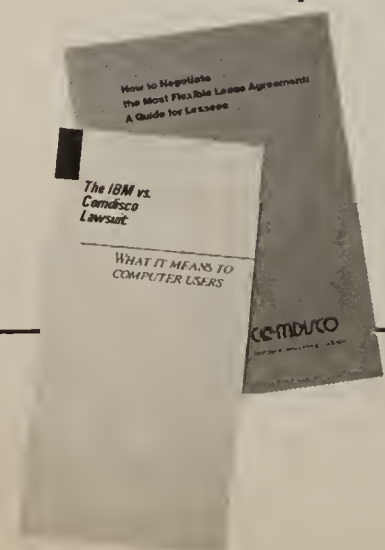
For a comprehensive discussion of these issues, Comdisco has two free guides to help you: *How to Negotiate the Most Flexible Lease Agreement: A Guide for Lessees* and *The IBM vs. Comdisco Lawsuit: What it Means to Computer Users*.

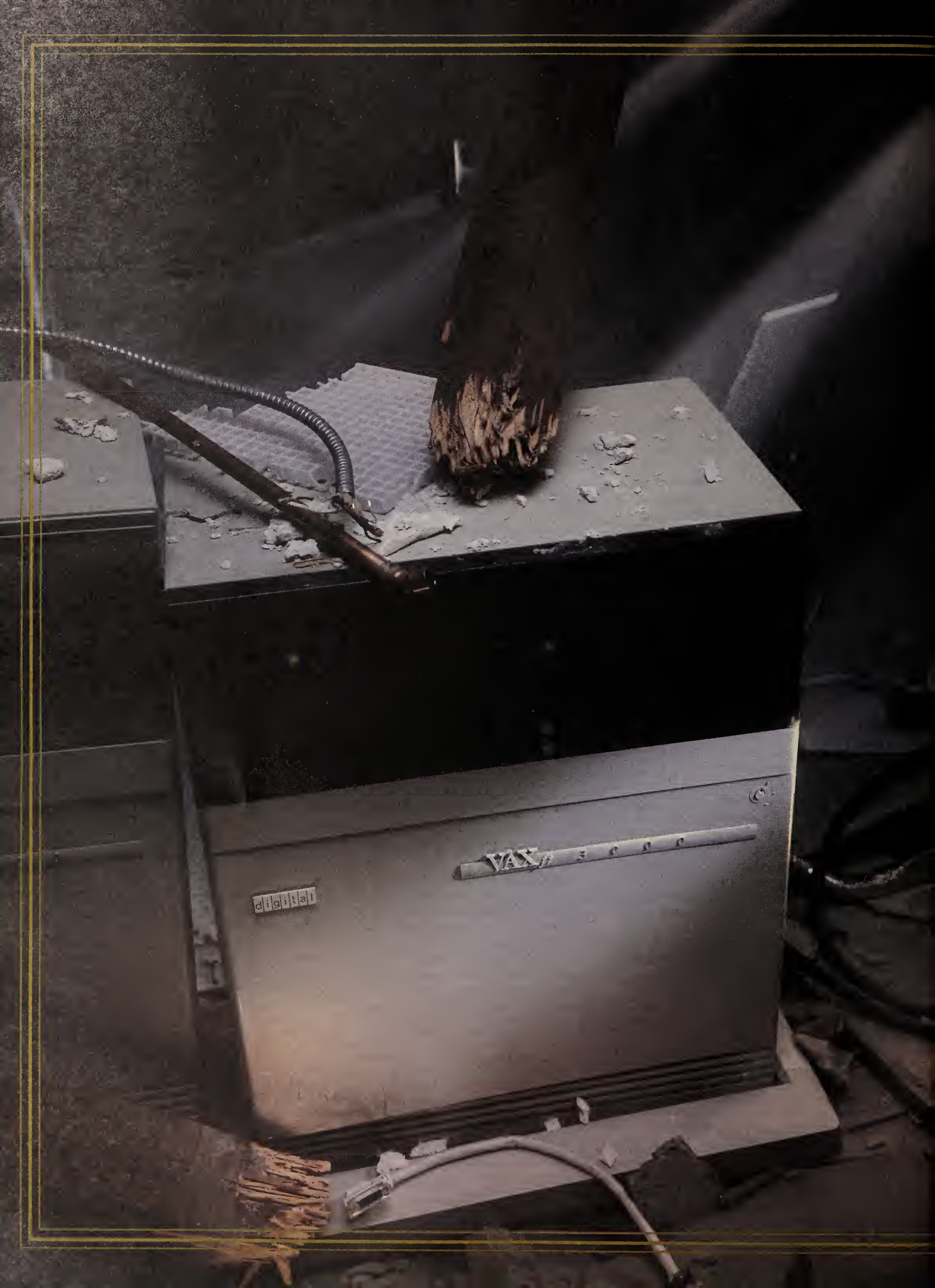


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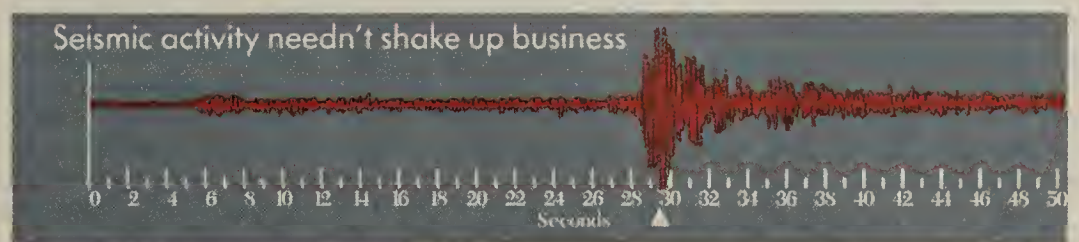
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EDITORIAL

Perestroika

As the Soviet Union completed its dissolution into independent republics last week, a business giant on these shores was beginning much the same process. While events at IBM can hardly be linked to those in the Kremlin, they do have one similarity: Both prove that planned economies don't work.

IBM's move to change itself from corporate monolith to holding company is a painful acknowledgment that conflict not only is inevitable within its product lines but also must be encouraged. This is a huge concession for a company that spent the last five years trying to make everything fit in its place.

Whether it's Systems Application Architecture, the now almost meaningless plan to make sense of a sprawling product line or IBM's frequent reorganizations, the message from IBM has always been the same: Everything is part of a bigger strategy.

But that message has become a sham. Products such as the RISC System/6000, which doesn't fit any plan at all, have sown mass confusion within the company by competing with everything from PCs to mainframes. It has also been one of IBM's most successful new products in years. Similarly, every time IBM endorses an open standard, it steps on one of its own proprietary lines.

If IBM can pull off the reorganization it envisions, it will lift the grand plan mind-set that has stunted so many technological achievements within the company.

Yes, IBM is a superb technology company. It spends more than \$7 billion a year on research and development. It invented the RISC architecture, did seminal work in relational database management, continues to set trends in storage and processor design and has single-handedly kept the U.S. competitive with Japanese chip makers.

But it has also allowed workstations to blow by mainframe price/performance, adopted open standards lethargically and let upstarts tuck the PC market in their back pockets. Despite all its innovation, IBM has insisted for too long that everything fit into some bigger picture. It then rolls this bureaucratic boulder over good ideas, slowing their time to market and lading them with the burden of having to keep out of someone else's way.

That works OK with captive mainframe customers, but it doesn't work with workstations, PC software, internetworking, LAN applications or any other area where IBM hasn't already defined the market.

It's impossible to predict how IBM will emerge from its current turmoil. But like the Soviet Union, IBM's predicament is a consequence of market forces. And like the Soviets, it has little choice but to accept the results.

Paul Gillin
Paul Gillin, Executive Editor



LETTERS TO THE EDITOR

Future visions

Your recent editorial, "Mistaken identity" [CW, Nov. 4], hit the nail right on the head in identifying one of the problems in the computer profession today.

While the Society for Information Management (SIM), as an organization, is not necessarily at fault, its membership is representative of a large number of people in the profession.

Our local chapter of SIM produced a videotape aimed at encouraging students to enter the profession. When the tape was previewed last spring, it was noted by one of the producers that it had been tested at an inner-city high school and had received a "mixed reaction."

Upon viewing the tape, which was composed of information systems professionals talking about their backgrounds and why they liked their jobs, I noted that 11 of the 15 individuals interviewed were white males, three were white females, and one was a minority female.

SIM should be lauded for its efforts at encouraging entry into the profession. However, based on the experience of your IS director and the videotape produced by our local chapter, more of us need to wake up to the fact that the work force of the future is going to look very different than it looks today.

Donald E. Heller
MIT
Cambridge, Mass.

Here now, gone . . .

As one of 20+ people laid off from my company this year, I find that your Fast Track advice [CW, Nov. 11] about "career paths" and statements about the

people firms are "willing" to hire triggers my gag reflex.

Wake up, folks. Those employers have no interest in developing a stable work force in information systems. They have too much to gain by recycling the staff every three to five years along with the software they choose to call "standard."

And you folks who think you are on the "bleeding edge" of technology, about to earn a bundle with the latest software, look over your shoulder. Next year, the software every employer wants will not be what you have "experience" in.

Sandra Lee Fisher
SLF Services
Evanston, Ill.

Business cents

Regarding "Hidden costs can undermine savings from outsourcing" [CW, Nov. 18], I found the tone of the article naive and alarmist.

You list a number of factors such as employee severance that unquestionably affect the financial viability of an outsourcing arrangement. However, you present them as if they were not knowable in advance and could jump out later on and take a big bite out of cost savings anticipated from outsourcing.

Any business or information systems executive worth his salt is aware of them and can fully understand and quantify their effect on the viability of the whole arrangement.

Your readers need to understand that when an outsourcing vendor forms a business "partnership" with a customer, we become so entwined in the success of our "partner" that it would be extremely foolhardy

for us to try to "put one over" on the customer.

Outsourcing is all about a long-term relationship, and no reputable outsourcing vendor wants to jeopardize that.

Ben Schrenzel
Infotech Corp.
Seattle

What's in a name?

"Cash drain, no gain" [CW, Nov. 25] discussed the disappointing gains made in productivity. It only repeated what many of us have known for 30 years.

It might have been more useful if it had explored the observations made by DuWayne Peterson in the sidebar to the article. He calls the missing link a methods engineer. I recall that we called it a systems analyst before that title was subverted by the computer specialists.

Nowadays, it's fashionable to beat up on the information systems staff because they aren't, as the author puts it, "involved and conversant in the work of operational managers." That's the role the systems analyst played as late as the early 1960s.

When the systems analyst became a superprogrammer, the referee became a player and the animals started running the zoo.

Earl Gates
Decatur, Ill.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

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Computers aren't pulling their weight

Manufacturing firms have invested heavily in high-tech equipment — with little or no return

ERNST R. BERNDT and
CATHERINE J. MORRISON



Berndt



Morrison

Several years ago, Wendy's ran a TV advertisement aimed at its rivals in the fast-food business, raising the simple question, "Where's the beef?"

Lately, we have been asking a similar question about returns on computer purchasing decisions —

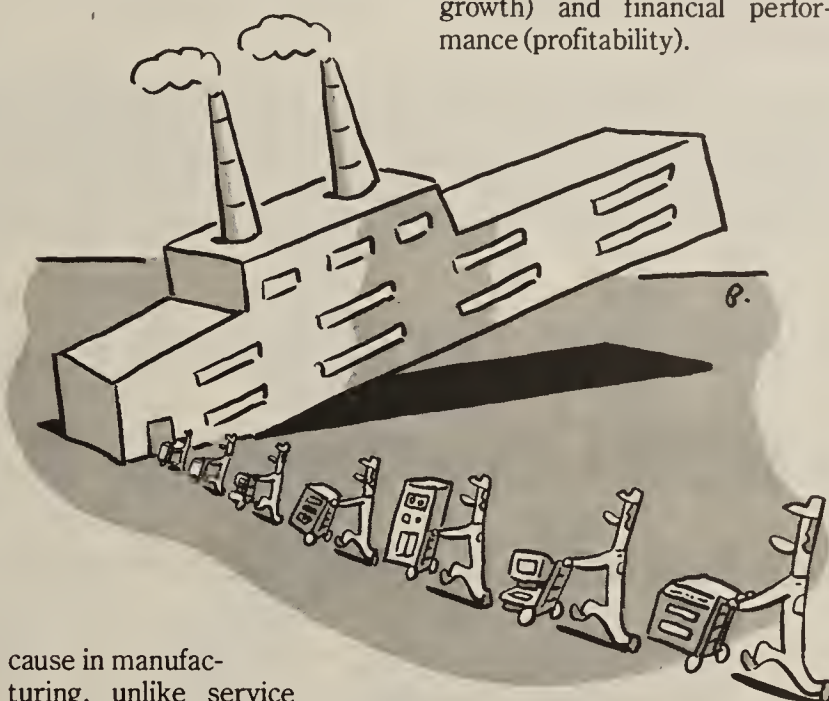
"Where's the productivity from computerization?"

Our research, stimulated by the lack of "hard" evidence on the payoffs from "going high tech," suggests that overinvestment in computerization is pervasive in U.S. manufacturing establishments.

As productivity researchers, we analyze the effects of various managerial decisions on realized productivity growth, and thus on the economic performance and competitiveness of U.S. companies. A critical aspect of these decisions affecting firms' cost-effectiveness has been the level and composition of investment.

Recently, we have been investigating the productivity im-

pacts of computer-related investments using annual 1968-86 data for 20 U.S. manufacturing industries. We chose to focus on manufacturing industries be-



Phil Marden

cause in manufacturing, unlike service sector industries, there has been substantial productivity growth in the last decade. Thus, if computer-related investments have been productive, their productive effects would be most likely to show up here.

Using government data for each industry, we constructed an aggregate measure of high-tech equipment capital consisting of office, computing and accounting machinery, communications equipment, scientific and engi-

neering instruments and photocopy and related equipment. We measured economic performance both in terms of productive performance (productivity growth) and financial performance (profitability).

turns to capital); accounting profitability (revenue divided by operating costs); and an ex-post internal rate of return to aggregate capital.

Using these measures and standard statistical regression procedures, we computed the change in economic performance arising from incremental investments in high-tech capital. Also, using a more sophisticated theoretical model and econometric methods, we computed the value to the firm of such investment in terms of the resulting potential labor, energy and materials cost savings.

Constructing ratios of this latter measure to the direct cost of the investment resulted in a benefit/cost measure reflecting the cost-effectiveness of investment decisions.

The results we obtained using both the traditional data analysis and the highly structured econometric methods were consistent and striking. Measurements based on almost all of these indicators of economic performance and benefits suggested that the payoff from additional investment in high-tech capital falls short of the costs.

Although computations based on merged industry data suggested that increases in the capital share of high-tech office and information technology capital

Continued on page 25

IBM head-rolling may be healthy exercise

MICHAEL L. SULLIVAN-TRAINOR



Oh, how the slick have fallen!

IBM's recent apparent demotion of U.S. General Manager George Conrades demonstrates how Big Blue is changing more clearly than any of the company's frequent redeployment or reorganization programs have.

Faced with declining profits and the reluctance of buyers to mindlessly follow whatever technology path the company deems best, IBM is beginning to move and act like an ordinary company where top-level executives feel the heat for business failure.

There is no surer sign of IBM's tumble from the Olympus of corporate America's untouchable companies than the removal of Conrades, a top executive who symbolized what IBM has been all about for years.

style and knowledge of the company was the epitome of an IBM salesman: slick, comprehensive and geared to make the listener comfortable.

If the industry watchword used to be "wait for IBM," then it was Conrades' job to make customers feel good about it. This he would do by listening to their needs and responding with hints of how IBM was working to solve their problems.

IBM IS beginning to act like a company where top-level executives feel the heat for failure.

"Opening the kimono" — a phrase meant to demonstrate IBM's new willingness to reveal its plans — was an oft-stated companion of "listening to the customer."

Too often, though, the company's strategic plans did not materialize soon enough to keep pace with the industry. Grand visions such as Systems Application Architecture failed to deliv-

er the immediate solutions customers needed.

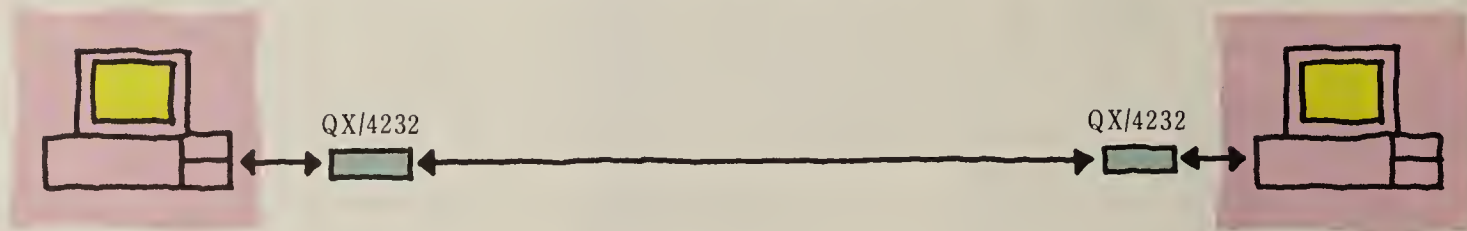
Although he was convincing and users and the press truly wanted to believe that IBM had seen the light and could change quickly, skepticism remained. Today, the skeptics have been proven right. Conrades' job change signifies the retirement of IBM's slick self-presentation.

Rather than a placater, Akers needs an executive who cannot only identify user needs but quickly deliver products to meet them. The appointment of Robert LaBant, who headed up the Application System/400 effort, would seem to indicate that IBM is turning to a more realistic approach, in which leadership is given to those with experience in keeping products profitable.

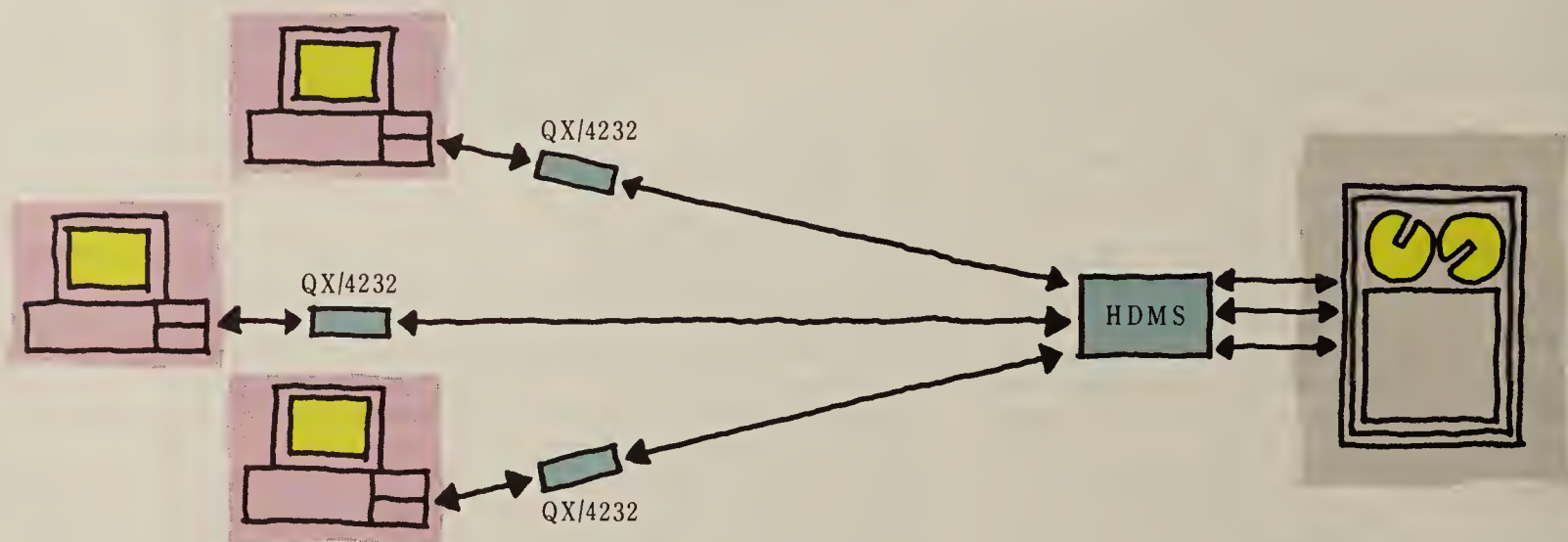
Is it fair to blame Conrades for IBM's current problems? Probably not. He was simply the standard bearer of a strategy that did not work. But that's the way that business operates. And, if his reassignment means that IBM is starting to think that it should operate more like other businesses, then it is probably a move for the better.

Sullivan-Trainor is *Computerworld's* research manager.

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Computers aren't pulling their weight

CONTINUED FROM PAGE 23

caused modest increases in profitability, analysis of the data for the 20 individual industries did not mirror this positive finding. In addition, all the evidence based on measures of performance other than profitability contradicted this finding on the effects of computerization.

The other financial performance indicators, for example, were affected no differently by high-tech capital investment than by investment in other types of capital. In terms of productive performance, it appears that increases in the share of high-tech capital causes decreases in multifactor and average labor productivity growth. Therefore, the data suggests that investment in high-tech capital is labor-using, rather than labor-saving.

EVIDENCE implies that most industries have overinvested in high-tech capital.

Evidence obtained using the more structural econometric methods also implies that most industries have overinvested in high-tech capital. In the sense that the incremental benefits of such an investment fall short of the associated costs, the "pay-off" from these investments began to erode in the early 1980s. By 1986, on average, incremental benefits were only 80% of incremental costs.

Our overall results clearly suggest that the aggressive investment in computerization observed in U.S. manufacturing in the last decade has been less efficient than is sometimes thought. The explosion of computer power may have been excessive. On the margin, a dollar invested in other types of capital now seems to have a higher return.

Our findings might have several other interpretations. For example, they might simply reflect serious measurement deficiencies. The official government output statistics by industry could understate true output growth, particularly if the indexes of output price and quantity failed to account properly for quality improvements.

A second interpretation is that potential benefits might be available, but they have not yet been exploited.

Learning to use hardware and software takes time, so the burdens of adjusting to new computer equipment and operating systems might significantly affect the observed short-term returns. In our study, however, when we allowed for lagged

learning effects, the result remained essentially unchanged.

Yet another interpretation is that computers have been enormously successful in lowering the costs of information and analysis. Precisely because of this, employers and employees have

become deluged with too much information. In this case, the new challenge is to learn how to efficiently process, summarize and extract the most valuable information from the plethora of information available.

At this point, we do not have

enough evidence to rank the relative importance of these or other possible explanations concerning the low measured returns to computerization investments.

What is clear, however, is that it is time we look at the bottom-line productivity impacts of these investments more carefully. As it stands now, Robert Solow was right when he said, "We

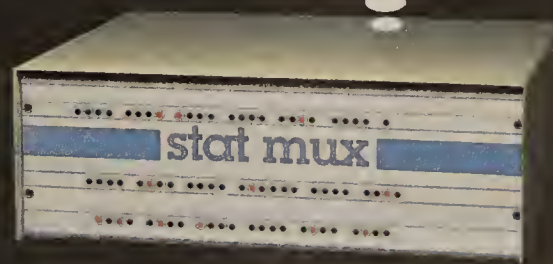
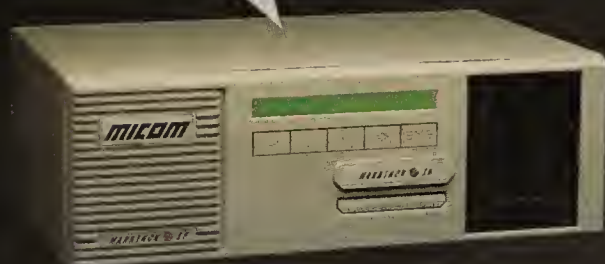
see computers everywhere except in the productivity statistics."

Berndt is professor of applied economics at the MIT Sloan School of Management and research associate at the National Bureau of Economic Research. Morrison is associate professor of economics at Tufts University and research associate at the National Bureau of Economic Research.

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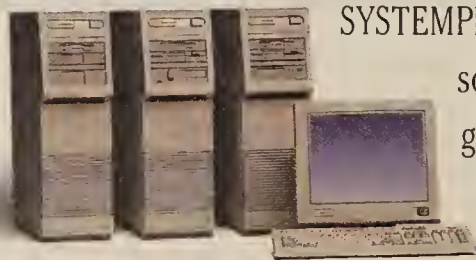
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“PowerBuilder

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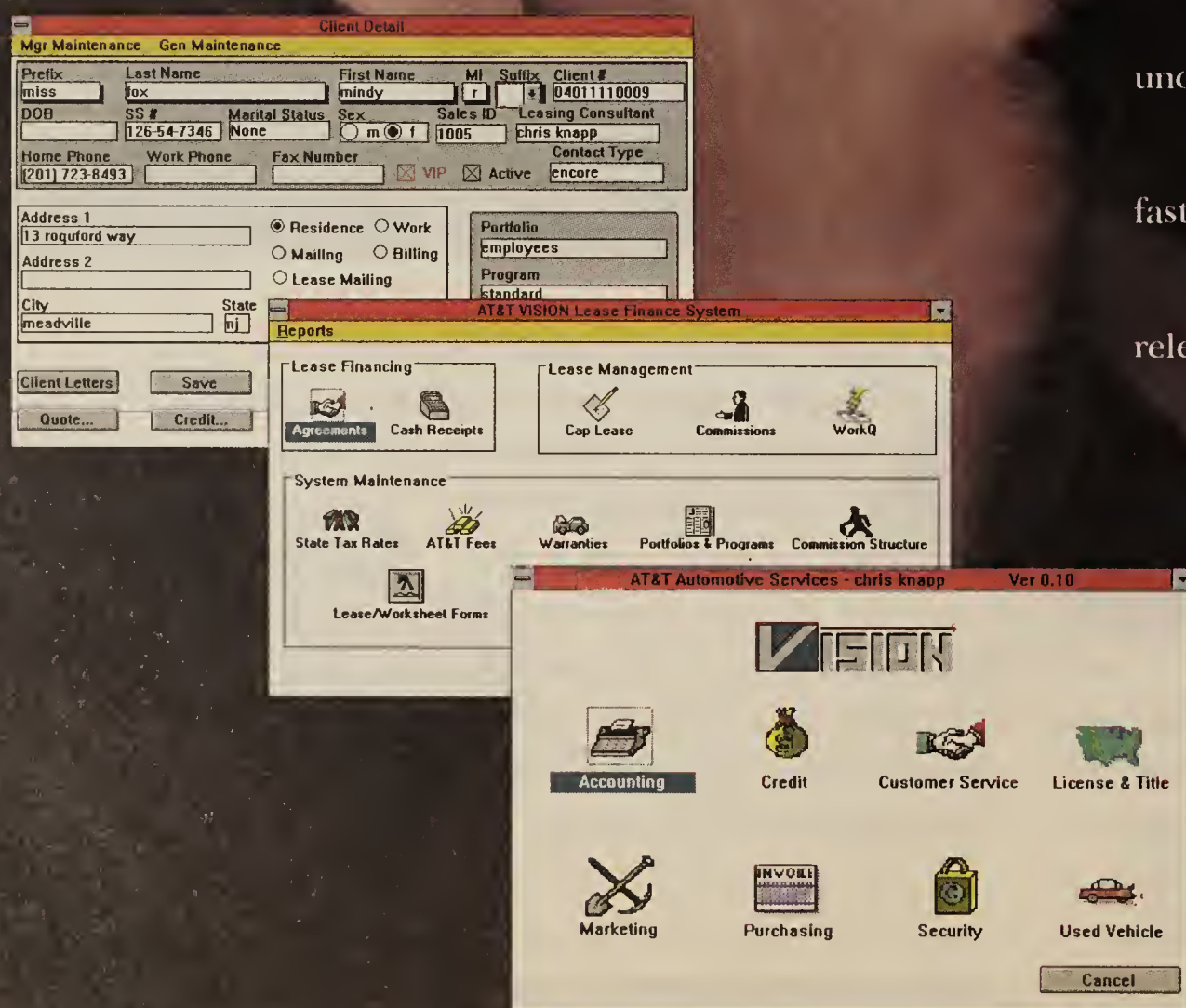
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SYSTEMS & SOFTWARE

NEW DEALS

Crowley adds host

Crowley Maritime Corp. in San Francisco has installed a **Hitachi Data Systems Corp.** HDS 420 mainframe, which is HDS' newest and most powerful system. Crowley, a diversified marine transportation company, is using the computer for general business applications.

Calgary, Alberta-based **Transalta Utilities** has installed four of **Digital Equipment Corp.**'s VAX 9000 mainframes. The power company is using the three Model 410s and one Model 420 for business applications such as materials and warehouse management, accounting and electronic mail.

Abbey National of London, England's fifth largest bank, has installed five new **Stratus Computer, Inc.** XA2000 Series 200 fault-tolerant machines and upgrades to four existing Stratus boxes. They are now on-line at Abbey National's new computer center in Shenley Wood, England, where they provide additional capacity for the Abbeylink's 860 automated teller machines and for loan services.

Amdahl lags in 3390 market

BY JEAN S. BOZMAN
CW STAFF

Amdahl Corp.'s prolonged delay in shipping its 6390 disk drives has forced users to shorten their shopping list for IBM-compatible 3390 drives. The wait, expected to end next quarter with customer shipments of Amdahl 6390s, has seemingly slowed the \$2.1 billion firm's momentum in the high-end peripherals market.

The Amdahl 6390 drives — based on technology from Fujitsu Ltd. — are up and running at Japanese sites, industry analysts said. But Amdahl has had to sell older technology 6380s — sometimes at deep discounts — just to maintain market share. "Their average selling price is

way below what they could normally achieve," said Carl Greiner, a director of Gartner Group, Inc.'s Large Computer Strategies group. "They've been forced to discount incredible amounts just to compete with IBM." Comparable IBM 3380 Model Ks, he noted, are already available in the used-equipment market.

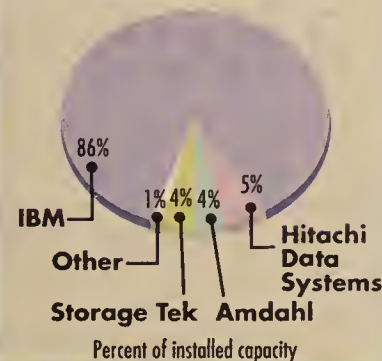
Amdahl trails other suppliers of IBM 3390-class drives in bringing that generation to market. IBM began delivering 3390 drives in December 1989; Amdahl competitor Hitachi Data Systems Corp. began delivering its 7390 drives in October 1990. Delays in Amdahl 6390 shipments were announced this summer and extended this fall.

Tiny slice

Amdahl holds only a small portion of a mainframe disk drive market dominated by IBM

3380/3390 use by manufacturer

U.S. IBM plug-compatible manufacturer mainframe systems



Source: Computer Intelligence/Infocorp
CW Chart: Janell Genovese

Still, mainframe users seem to be more concerned about product availability than in pointing fingers at vendors. "It really doesn't affect our planning too much," said Gordon Dahlmann, acting director of MIS for the city of San Antonio, which has two Amdahl mainframes and many Amdahl 6380 K drives. "We go with the IBM standard, and if Amdahl can produce a compatible device, fine. If they can't, forget it." However, San Antonio is not yet ready to buy any IBM 3390-type devices, he said.

The city of Houston also has Amdahl mainframes and Amdahl 6380 disk drives. But Houston will probably defer the purchase of 3390-type drives until it migrates its systems from MVS/XA to MVS/ESA next year, said Coy Baskin, the city's

Continued on page 36

Storage Tek moves into AS/400, RS/6000 field

BY J. A. SAVAGE
CW STAFF

LOUISVILLE, Colo. — Storage Technology Corp. made two moves to get into IBM's Application System/400 and RISC System/6000 in the last few weeks.

The company announced that its generic plug-compatible nine- and 18-track tape subsystems would have specific AS/400 and RS/6000 compatibility. It also completed the acquisition of XL/Datacomp, Inc., a firm with distribution and service in those two markets.

"This makes them a bigger force at a faster pace in the mid-range market," said Fara Yale, a senior industry analyst at Dataquest, Inc. She added that consumers may benefit from the acquisition because most other subsystem makers have two or three tiers of resellers between the manufacturer and the end user, and Storage Tek will have only one, thus improving communication.

The 1,000-employee XL/Datacomp in Hillside, Ill., will continue to have its own identity, and its customers will retain

the same sales contacts, a Storage Tek spokesman said.

Storage Tek's new hardware products are the first peripherals the company is offering specifically for the AS/400 and RS/6000 markets. "Before, we sold products to generic OEM accounts and forced them to write the microcode for compatibility," said Todd Gresham, the firm's manager of worldwide reseller sales and marketing. "We took AS/400 and RS/6000 compatibility on ourselves."

Lower price

Storage Tek claims its new subsystems cost about 20% less than IBM's. Its IBM 3490-compatible 18-track subsystem, called Model 4284, is \$24,500 for a single drive. A 10-cartridge automatic loader adds another

\$3,500 to the cost.

An IBM 9348-compatible nine-track system, Model 9948, costs \$16,340. Both have relatively small form factors: The 18-track is about as big as a one-drawer filing cabinet; the nine-track is the size of an attache case.

Both types of storage devices are available immediately, according to Storage Tek. The company said it plans to add storage compression compatibility with IBM's Improved Data Recording Capability in early 1992. Next year, Storage Tek will have a redundant array of inexpensive disks product for the AS/400, according to a spokesman. The company has also announced that the 18-track tapes will be available in a library configuration, called Redwood, in 1994.

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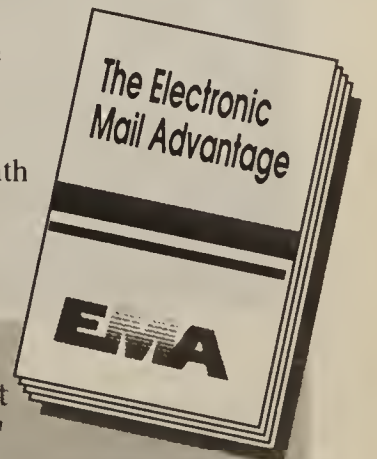


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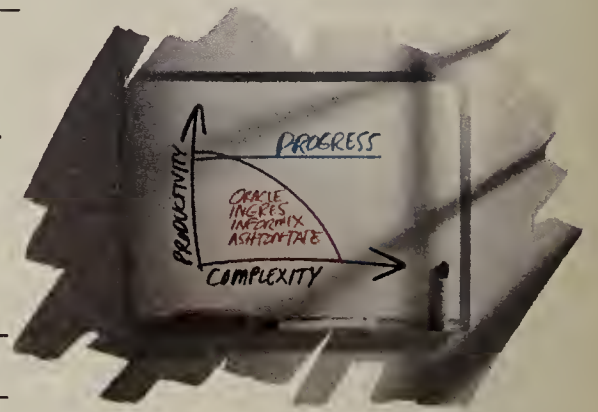
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CPWADV1209

GTE meets '91 reverse-engineering goal

ON SITE

BY JOHANNA AMBROSIO
CW STAFF

As GTE Data Services, Inc.'s reverse-engineering project enters its second full production year, the company's motto this holiday season might well be: Out with the spaghetti code, in with the structured programming.

In the reverse-engineering project, a team of five information systems staff members analyze the code in old applications and migrate it, at a specification level, into a repository-based computer-aided software engineering (CASE) environment. The goal is to cut down the time it takes to maintain the old applications by 20% to reuse the reverse-engineered code in new applications. Ultimately, the reverse-engineered programs can then be fundamentally changed, with functions deleted or added and the whole design altered if need be, with a 30% to 50% time savings.

This year, GTE Data Services has reverse-engineered more than 150 programs containing some 175,000 lines of code, said Scott Coryea, systems supervisor at the Tampa, Fla.-based firm's Software Productivity Group. Next year, he hopes to accomplish even more. "While the numbers [so far] aren't significant," he said, "it has validated both the technology and our methodology in a real-world environment. Our 1991 objectives have been met."

Although reverse-engineering and re-engineering are not new concepts, many of the tools that enable them have become available only in the past few years. Other user organizations that are experimenting in these areas include Aetna Life and Casualty Co.'s Personal Financial Security Division in Hartford, Conn.; Merrill

Lynch & Co. in New York; and Pacific Bell [CW, Oct. 22, 1990].

GTE Data Services, which develops and maintains software used by GTE's telephone operating firms, began looking at reverse-engineering in 1989 as part of a companywide program to standardize its tools and methodologies. As such, reverse-engineering "is only part of our total implementation of CASE technology," Coryea said. "We want to manage all of our business, the entire development life cycle."



Coryea: 'More organizations want to work with us'

As the company was looking at tool kits in 1989, one of the major selection criteria was that the product address both new and existing applications, Coryea said.

GTE Data Services chose Pacbase from CGI Systems, Inc. in Pearl River, N.Y., as its standard development tool kit be-

cause it included both sets of functions.

Coryea said, however, that although Pacbase is his company's standard for the telephone operating companies, other parts of GTE use other tools.

Coryea and his four-person team began beta-testing the reverse-engineering portion of Pacbase in early 1990; pilots and production systems followed this year. "As we were evaluating it, we were putting together our methodology," Coryea said.

SWAT team approach

Part of the methodology includes what Coryea described as a SWAT team approach. Instead of training every maintenance programmer to reverse-engineer, Coryea and his group did the work and then taught the others what was required to maintain the applications.

"We did the analysis and the grunt work," he said. "Once the reverse-engineering has been completed, there's no need for them to understand the process. They just need to know how to

maintain the code."

At this point, there are no solid measures of the program's success, he said. "It takes some amount of time to collect metrics on benefits because we don't have hard figures to compare to. With new applications, you can always compare the traditional vs. the new way and figure out what you've saved."

But that analysis is "much more difficult to do with reverse-engineering because the conversion effort requires a front-end cost, and the benefits are not in that end of the cycle. They show up later, with reduced maintenance or the ability to take the application and change it easily."

Still, he said, "I see some encouraging signs. More organizations want to work with us and invest time and resources."

The acid test will come by year's end, when GTE Data Services' senior management will approve or reject Coryea's plan that he is putting together for 1992.

"We're conducting high-level analysis, selecting which applications to do, building a business case and looking for management approval to move forward," he said.

Candle product revamp begins to take shape

BY JEAN S. BOZMAN
CW STAFF

A product revamp is under way at Candle Corp., where the long-time mainframe software supplier is bringing technologies such as object-oriented programming, relational databases and C++ development to its traditional monitoring product line.

The move is one step in what analysts said is a necessary strategy for Candle and its competitors as they deal with changes in the IBM mainframe world and the growth of open systems.

The new techniques, collectively known as CT for Candle Technologies, will start being

applied to IBM's Systemview product line in 1992.

"It's a peer-to-peer type of architecture," said Scott Phares, who manages Candle's relationship with IBM's International Alliance for Systemview. "The user doesn't have to be aware of every node that's plugged into the enterprisewide data network."

CT provided the technical underpinnings for Candle's Application System/400 system management software, announced last month [CW, Nov. 11].

Once Candle rolls CT into all of its mainframe monitoring products, users will be able to customize their system con-

soles, which will often be personal computers. One set of data from the MVS/ESA operating system could be displayed in several ways, as could menus allowing users to "drill down" into finer levels of detail. The same technology will allow information systems managers to monitor mainframes from their homes — something reserved for special "outboard" monitoring systems today.

Object-oriented technology is being leveraged by Candle to bring the traditional worlds of IBM's Systems Application Architecture and Systems Network Architecture closer to an open systems computing environment.

"IBM has a problem integrating the mainframe with the rest of the enterprise," said Stephen Josselyn, a senior analyst at International Data Corp. in Framingham, Mass. "CT technol-

Broad appeal

Candle's Omegamon family, now destined for a revamp, is heavily used throughout the IBM mainframe world

Candle's Omegamon (worldwide installed base)

For DB2	1,100
For CICS	3,699
For MVS	5,410
For VM	1,659
For IMS	1,015

Source: International Data Corp.
CW Chart: Janell Genovese

ogy is a way of making the transition [to distributed computing] without having to replace the stuff that is already in place."

Some analysts said they believe it is only a matter of time until Candle and its competitors move into new arenas, including Unix systems. "We think there will be a large migration of function into the client/server architecture over the next two years," said Fred Joy, senior research analyst at Meta Group, Inc. in Westport, Conn. "You can infer that, since these tools are written in C or C++, that they could be used in other environments as well." Among the firms that might have similar technology is Legent Corp., which has not joined IBM's Systemview program, Joy said.

CT has four key components: a data server repository based on relational database methods; a client workstation to support multiple graphical user interfaces; a Distributed Computing Services software "switch" to connect data-server nodes; and

an Application Logic Services package to customize data management programs. In 1992, CT will be applied to Candle's flagship Omegacenter software for IBM's MVS operating system. By 1994, it will be applied to Candle products for IBM's CICS, MVS, IMS, DB2 and VTAM subsystems.

What Candle has done with CT may soon be echoed by IBM as the Systemview products roll out. "IBM has an aces and spaces strategy," Joy said. "IBM has a few star products, and what they don't cover — the space — will be filled in by the Systemview partners, like Candle."

NEW DEALS

\$15M accord announced

NCR Corp. and Software Translations, Inc. have announced a \$15 million, five-year strategic partnership to provide Digital Equipment Corp. VAX users with a migration path to the open systems environment of NCR's System 3000.

Unisys Corp.'s CTOS operating system has received certification by the National Institute of Standards and Technology for Posix compliance. CTOS Posix runs on Intel Corp. 80286- and 80386-based workstations and is a critical element in the Unisys CTOS/Open product strategy for open systems markets.

Candle lights CT line

Key products in Candle's CT line include the following:

- CT/Workstation Server. Supports multiple graphical user interface standards, including Open Software Foundation's (OSF) Motif, the IBM Personal System/2's Presentation Manager and Microsoft Corp.'s Windows 3.0 GUI. Compliant with IBM's Common User Access standard, the workstation server allows users to choose which of several ways to present data on-screen.
- CT/Data Server. The server, based on relational database technology, uses industry-standard SQL to access data from a variety of

sources within an enterprise data network. It uses a gateway technology to reach into SQL-based data repositories, including IBM's DB2.

- CT/Distributed Computing Services. Supports the CCITT's X.500 standard for the handling of electronic messages, the OSF Remote Procedure Call standard and OSF's Distributed Computing Environment. It also supports a layer of security software on all platforms.
- CT/Application Logic Server. A set of preprogrammed application programs that users can modify to create object-oriented applications used in conjunction with IBM's Systemview.

JEAN S. BOZMAN

D&B Software user groups to merge in Alliance

BY SALLY CUSACK
CW STAFF

Since the merger of McCormack & Dodge and Management Science America, Inc. more than a year and a half ago under the Dun & Bradstreet Software name, their respective user

groups have been hammering away at various plans designed to painlessly integrate 15,000 aggregate members into a single unit.

It looks as if they have succeeded. This April in Atlanta, D&B Software customers will meet under one banner to kick

off the first official Alliance User Week.

Nine former user group officers have been meeting over the past year and half to see that the new user group becomes a reality. The new entity, called Alliance, will have six key conferences each year.

Scott Davey, advisory co-chairman for Alliance and a former McCormack & Dodge user group activist, said that the size and scope of the group demands more than one large meeting in order to meet people's business needs.

The new order calls for five

major regional meetings each year and a conference of national scope to be held each spring. The regional meetings will be grouped into four areas of the U.S. and one in Canada, and meetings will be conducted in the August through October time frame each year.

"Most people are excited in trying to make it happen, but there are some concerns," Davey said. "Some product groups with small user bases feel they may get lost in a big organization."

Regional needs

Davey said that the regionally segmented meetings will enable the user group to address specific needs. For example, regional conferences will be heavily geared toward user presentations and sessions.

"We want the regional meetings to have a real end-user-oriented flavor," Davey said. "One of those 'how do I best use what I've got' type of conferences."

Davey said he anticipates that

AT THE NATIONAL spring conference, Alliance officers anticipate a 50/50 split between presentations conducted by users and those by D&B Software.

the regionals will attract users from middle management on down to the departmental supervisor level.

At the national spring conference, Alliance officers anticipate a 50/50 split between presentations conducted by users and those by D&B Software.

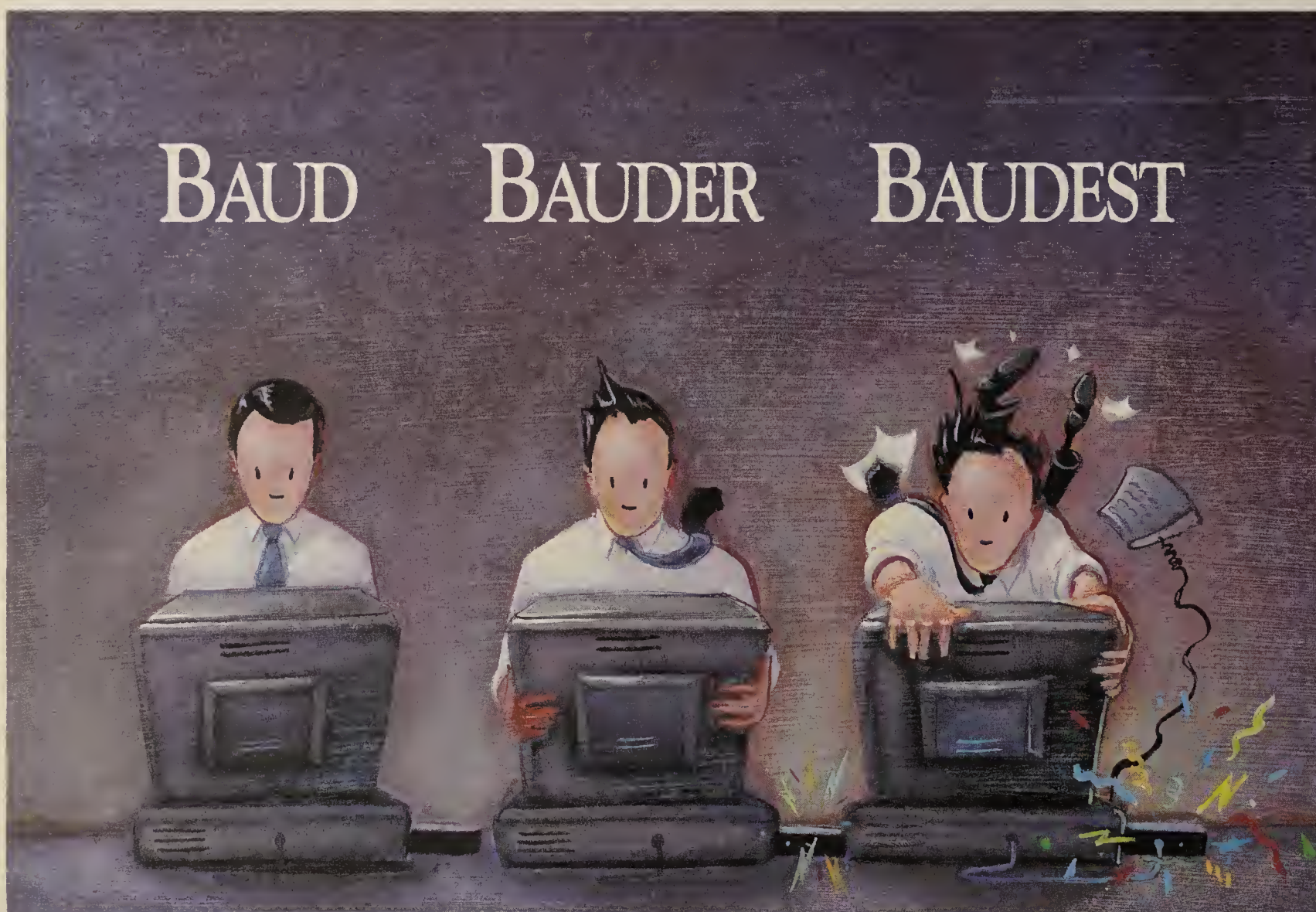
Alliance has no professional staff; the group is run through volunteer labor and is coordinated through D&B Software's offices in Atlanta.

User-group officials anticipate approximately 3,000 attendees at User Week this spring and between 1,000 and 2,000 people at each demographic location.

"Our challenge is to find ways of adapting ourselves to meet the needs of the users," Davey said. "We have to effectively communicate the purposes of the different conferences so that users may attend the conference most appropriately suited to their needs."

At the top of the agenda at all conferences will be the development of industry advisory groups to advise D&B Software on both product enhancements and product development, according to Davey.

"People want to get together to help define product direction," he said.



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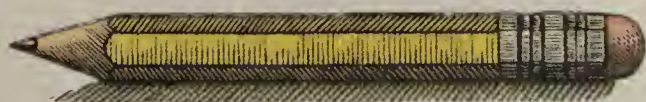


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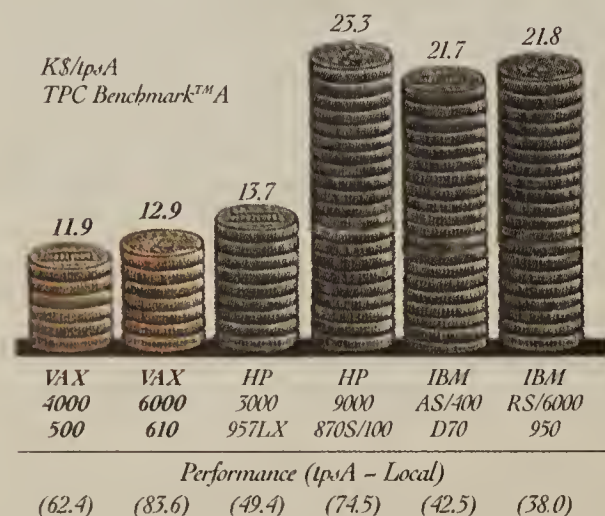
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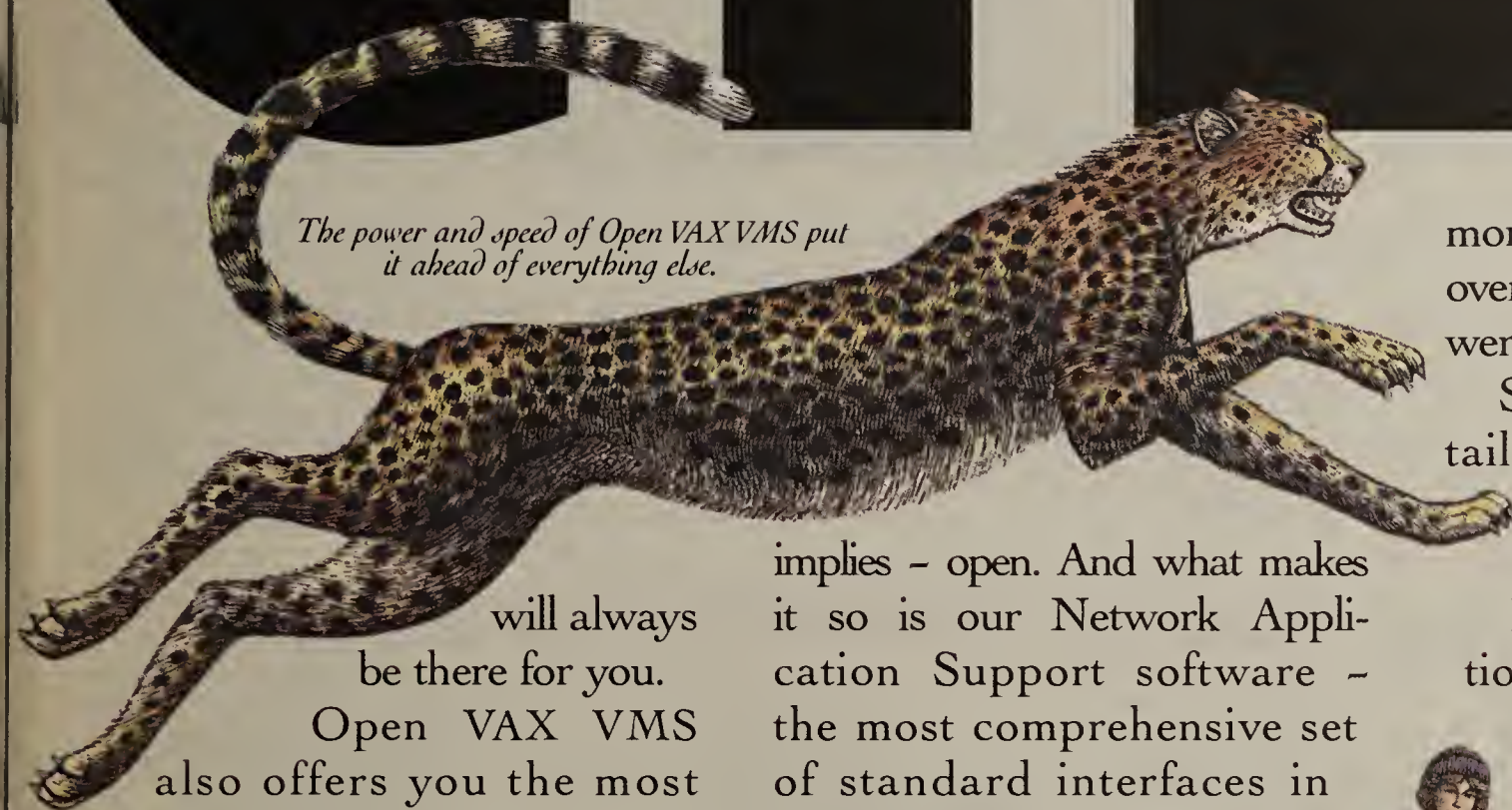
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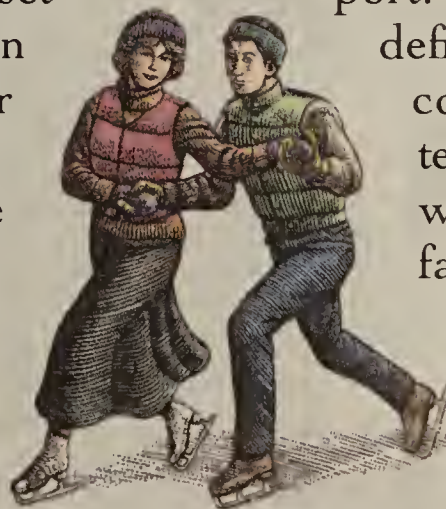
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DG gear showers U.S. agency

Workstations, servers monitor water resources in drought-ridden Calif.

ON SITE

BY KIM S. NASH
CW STAFF

"Water, water everywhere, nor any drop to drink." Nor wash the car with, nor nourish the crops with, either — not in California, anyway.

Less than 50 inches of precious drops have rained down on the Golden State so far this year, 46% dryer than normal, according to the Climate Analysis Center at the National Weather Center in Washington, D.C.

Slogging through drought periods like this one requires careful municipal and agricultural planning, which means state agencies have to know about weather conditions ahead of time. Until this year, water monitoring and forecasting were jobs done on 71 Model 9955 and Model 6000 series minicomputers from Prime Computer, Inc.

But no more: The U.S. Geological Survey's Water Resources Division (WRD) — the federal agency that tracks hydrologic happenings in all 50 states — is dancing to the down-

sizing beat. Workstations and servers from Data General Corp. are the instruments of choice, more than 1,100 of which have been installed so far this year in the U.S., Puerto Rico and the Pacific Island Trust Territories.

The DG hardware ushers in Phase II of the WRD's Distributed Information System (DIS), a seven-year program to replace the Prime minicomputers with Unix-based machines strewn across the country and connected by local-area networks.

Application portability, graphic functions and raw desktop power are the main reasons for the switch, according to Gloria Stiltner, chief of the DIS program office at the WRD. The group signed a seven-year contract earlier this year for 200 to 400 DG Avion 6200 series servers and 4,000 Avion 300 series workstations, one for each WRD employee.

"We saw payback over the Primes within the first six months of having these boxes installed," Stiltner said.

However, the process has not been painless. The WRD now has the unenviable task of port-

ing homegrown Fortran applications built specially for Primos to DG-UX. The biggest and most important systems are two proprietary programs: the National



Over 1,100 Data General systems are tracking information gathered by the U.S. Geological Survey's field workers

Water Information System (NWIS) and the Administrative Information System. The 20-member IS staff has so far translated three major scientific interpretation programs, which are part of NWIS:

- Hydrologic Modular Model, which measures and charts rainfall runoff in streams and other small bodies and also assesses water quality.
- Groundwater Model, which evaluates the movement of pollutants.
- Stream Flow Display, which predicts the length and severity of drought and flood periods.

To help with software conversion and hardware installation, expert teams of computer engineers from the WRD and DG make rounds to local sites. They configure the software load across servers and worksta-

tions, figuring out which parts of the application are best run on which machines. Under the new contract, the WRD bought word processing and report-writing software from Frame Technology Corp., a relational database from Ingres Corp. and a statistical package from Statware, Inc.

All the WRD programs run on the Avion servers and can be accessed by each local office. Although these applications ran on the Prime machines, they perform better on the Avions, Stiltner said, giving users quicker access to more data. Furthermore, the windowing feature of DG-UX lets scientists look at and manipulate data from several locations as once.

Overall, the workstation/server setup is cheaper than the Prime minis and "gives individual users a lot more power on the desktop," she said. In addition, as the WRD adds offices or staff, the proprietary applications can easily jump into the more open Unix environment, she added. And the local offices can retrieve information from one another's databases for scientific, administrative and geographic information systems-related tasks.

Stiltner said she expects her group to install about 1,000 more Avion workstations and between 25 and 50 more servers during the coming year.

Amdahl lags in bringing 3390 class to market

CONTINUED FROM PAGE 29

information systems administrator. When Houston sends out its future bids, it expects Amdahl to match all IBM 3390 features. "It's getting to be like the PC business in terms of IBM compatibility," Baskin noted. "You have to do it 100%."

Amdahl executives blame difficulties in reprogramming the microcode in the 3-year-old 6100 disk drive controller as the source of their 6390 problems. But industry analysts point to earlier Amdahl decisions to re-engineer IBM 3390 technology as the cause of the delay.

"They tried to do things differently [than IBM]," said Robert Callery, a senior storage analyst at International Data Corp. in Framingham, Mass. "Now they're trying to repair things, and it's taking them a lot longer to get to market."

The Amdahl drives have 16 data paths instead of four — and more "flavors" of capacity than comparable IBM 3390s, Callery said. HDS drives are more closely matched to IBM models, analysts said.

When shipped, the new microcode in the 6100 disk drive controller will be able to support most IBM 3390 features trans-

parently. Up to now, users have had to run Amdahl's Storage Processor Management Services (SPMS) software on their mainframes to allow Amdahl disk drives to run transparently under IBM's System Managed

"I T'S GETTING to be like the PC business in terms of IBM compatibility."

COY BASKIN
CITY OF HOUSTON

Storage. The new microcode would replace the SPMS software, Amdahl said.

Technically, several key 3390 "features" will still be missing from the Amdahl 6390s when they are shipped next year, said Al Richard, manager of Amdahl's storage systems marketing. While Amdahl already supports the IBM 3390's "fast-write" option, it has not announced when it would support IBM's "cache fast-write" or "dual-copy" options, according to Richard.

NEW PRODUCTS — SOFTWARE

Unix software

Informix Software, Inc. has begun shipping Wingz 1.1B for Unix workstations.

The graphical spreadsheet can now export spreadsheets and charts to Island Graphics Corp.'s Island Write, Island Draw and Island Paint products as well as Frame Technology Corp.'s Framemaker documents.

The new release supports workstations from Hewlett-Packard Co. and Sun Microsystems, Inc.

A single-user license costs \$699.

Informix Software
4100 Bohannon Drive
Menlo Park, Calif. 94025
(415) 926-6300

Reasoning Systems has announced Refine/Fortran, a customizable re-engineering tool for Unix workstations.

Refine/Fortran produces structure diagrams and cross-reference reports for Fortran source code. It also labels coding standards violations.

The product includes an applications programming interface, allowing users to create new re-engineering procedures.

Refine/Fortran can also export information to Interactive Development Environments, Inc.'s Software Through Pic-

tures computer-aided software engineering tool set.

An introductory price of \$3,500 is offered for a single license until mid-February. Regular pricing is \$4,900.

Reasoning Systems
3260 Hillview Ave.
Palo Alto, Calif. 94304
(415) 494-6201

Utilities

Delta Microsystems, Inc. has announced that its Budtool automatic backup and retrieval software now supports Digital Equipment Corp. VMS systems.

Budtool runs on Unix workstations. It now offers the ability to back up a DEC VMS system to a Sun Microsystems, Inc. workstation over a Transmission Control Protocol/Internet Protocol network.

The product stores on 8mm tape, digital audio tape and ¼-in. cartridge systems.

Pricing starts at \$4,995.

Delta Microsystems
5039 Preston Ave.
Livermore, Calif. 94550
(415) 449-6881

HARDWARE

Processors

Clearpoint Research Corp. has announced memory upgrades for

the Digital Equipment Corp. VAX 4000 Model 60.

The DCME-576 upgrade boards are available in 8M- and 32M-byte configurations. The products cost \$950 and \$3,110, respectively.

The company has also announced a 5G-byte 8mm tape drive for unattended high-end VAX backup.

The TSB-T01 subsystem offers 500K byte/sec. data transfer and is priced at \$16,500.

Clearpoint Research
35 Parkwood Drive
Hopkinton, Mass. 01748
(508) 435-2000

Data storage

IPL Systems, Inc. has announced disk array subsystems for IBM Application System/400 midrange computers.

The products are compatible with IBM 9406 B and D processors and with the IBM 9336, the company said. The high-end IPL 7936 Model 30 stores more than 5G bytes.

The company also reported that the products use fewer components and offer high reliability.

Pricing ranges from \$39,600 for a low-end Model 10 to \$63,000 for the Model 30. Until year's end, the Model 30 is offered for \$48,500.

IPL Systems
60 Hickory Drive
Waltham, Mass. 02154
(617) 890-6620

PCs & WORKSTATIONS

NEW DEALS

Fla. district picks Apple

The **Broward County School District** in Fort Lauderdale, Fla., has signed the largest education-related unit acquisition contract in **Apple Computer, Inc.**'s history, agreeing to spend \$13.5 million on Apple equipment. The school district is buying 7,000 Macintosh LCs and 1,000 Macintosh Classics for use in computer laboratories and classrooms.

Arco Oil & Gas Co. has agreed to buy handheld ruggedized computers from **Fujitsu Systems of America, Inc.** for use by its oil well lease operators. Arco estimated that use of the Fujitsu 2916IS by 108 lease operators will save more than 2,100 hours monthly.

Northrop Corp. has agreed to purchase \$5 million worth of **Hewlett-Packard Co.** reduced instruction set architecture-based workstations, servers and X terminals. Northrop plans to install 91 HP Apollo 9000 Series 700 workstations and servers and 285 HP 700/RX color X stations at its Palmdale, Calif., manufacturing facility.

DOS interface understands plain English

BY JAMES DALY
CW STAFF

WEST SENECA, N.Y. — If you have had it up to here with cryptic and unforgiving DOS commands, you are not alone. While plenty of people understand English, it has been a frustrating fact of life for millions that personal computers do not.

Until now, that is.

Both novice and longtime DOS users can now turn to A. I. Solutions, Inc.'s PC-IQ, a \$99.95 natural language shell that uses common English to execute DOS

commands. "It's a pretty slick program because it puts a little more of the 'personal' in personal computing," said Jim Matteson, who uses PC-IQ in his position as sales representative at Associated Spring, a custom metal manufacturing unit of Bristol, Conn.-based Barnes Group.

Announced earlier this fall, the package, which some users now have experience on, also marks a real-world success story for artificial intelligence, whereby a computer appears to think and react on its own.

Although the concept of artificial intelligence has been bandied about for years, its use has been limited primarily to research laboratories and computer chess games.

PC-IQ was designed for those who want to do as much as possible with their PC but have neither the time nor inclination to learn the nitty-gritty nuances of DOS. PC-IQ users can simply tell their PC what to do in their own words, rather than trying to use cryptic DOS commands.

Want to delete a file? Type the file name with "erase,"

"kill" or even "zap." A typically esoteric DOS command like "copy *.* a:" would become "copy all my files to drive A." The program translates the command into DOS lingo and does the task.

The product is not a mind reader, said James Nasson, A. I. Solutions' vice president of software development. But as long as users are being concise and try alternative wordings, users should be able to communicate without looking for the DOS manual. Or if PC-IQ does not un-

Continued on page 40

RISC market embraces business users

BY MARYFRAN JOHNSON
CW STAFF

SARATOGA, Calif. — The expanding market for reduced instruction set computing (RISC) is reaching beyond technical workstations to more broadly defined business users, according to a new study of the RISC market.

Electronic Trend Publications, a research firm based here, found that many vendors have discovered that business users "neither understand nor value the very technical patina" surrounding RISC performance benchmarks or design. Instead, users are basing their buying decisions on ease of use and variety of available software.

The research firm recently surveyed more than 40 computer industry vendors and found that 1991 sales of RISC-based

products are expected to be \$5.8 billion. By 1995, that figure is estimated to triple, to \$15 billion.

Total shipments of RISC systems for 1991 are estimated at 357,000 units, including RISC-based high-performance microcomputers, workstations and midrange systems. The 1995 estimated shipments are 1.6 million units.

This year also marks the point at which RISC workstation prices began dropping into personal computer price ranges of below the \$5,000 mark. The most notable of these are from Sun Microsystems, Inc., which was joined last week by Digital Equipment Corp.'s new Personal Decstation models.

Although growth of the RISC market is ex-

pected to stay centered on workstations, the nature of that market is changing as it expands downward to microcomputers and upward into midrange servers, the survey found.

"Turnkey solutions are a thing of the past," said Gene Selven, publisher at Electronic Trend Publications. "Moving into RISC for all new designs is a fait accompli. Now it's a function of what platform or microprocessor you work with."

The dominant RISC camps today are Sun and its Scalable Processor Architecture chip and Mips Computer Systems, Inc., which are serving growing demands for networked RISC desktop machines that displace traditionally midrange and small mainframe systems.

While vendors such as IBM and DEC often argue that RISC and Unix need not go hand in hand, users interested in open systems almost always link Unix and RISC, the survey found.

Out of adolescence

The RISC market should be moving into adulthood in the next few years

Computer systems using RISC

1991	1995*
Unit shipments 357,000	Unit shipments 1.6M
Value \$5.8B	Value \$15B

*Projected

Source: Electronic Trend Publications

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The Micro Focus 370 Assembler is a tool which helps maximize the productivity of both the mainframe Assembler programmer as well as the COBOL programmer whose application calls Assembler subroutines.

Micro Focus 370 Assembler allows PC development and maintenance of host based Assembler and mixed COBOL/370 Assembler applications when used with Micro Focus COBOL/2 Workbench. The full featured Assembler programming environment includes:

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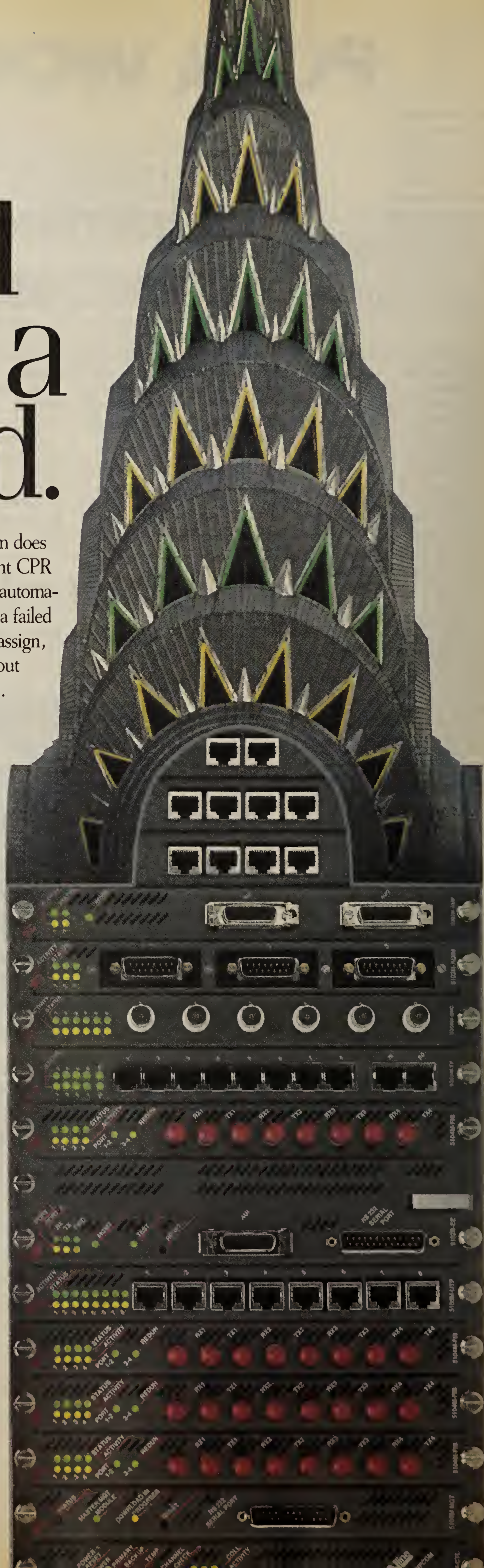
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Travel firm rides PC system to efficiency

ON SITE

BY CHRISTOPHER LINDQUIST
CW STAFF

How would you like to manage more than 1,000 personal computers on 170 Novell, Inc. networks and a couple of minicomputers with only yourself and four other employees? Even worse, imagine that those PCs and networks are distributed around the world and that you have to create systems so simple that even a computer novice can operate them. That is exactly what Rock Blanco, vice president of information systems and automation marketing at Garber Travel in Boston, is doing.

To aid him in his task, Blanco employs a variety of tools, including electronic bulletin boards, fax servers, software automators and an array of other applications and utility software.

Blanco has been so successful at what he does that he started another company, RPX Technology, which performs consulting and markets some of the tools he develops for use in-house — even to Garber's competitors. Garber does not appear to mind, though — it owns 50% of RPX.

Getting personal

When Blanco came to Garber in May 1988, there were no PCs to be found. All work was done on dumb terminals connected to Data General Corp. minicomputers, which in turn connected to American Airlines' Sabre reservation system.

Once he settled in, however, Blanco began to switch to IBM Personal System/2s, which he chose because of their ease of configuration and support. "When you're trying to support 1,000 PCs, and you're the only one in your company who under-

Big job, small team

Judicious use of software and hardware helps five Garber Travel IS employees keep a handle on more than 1,000 PCs

- The Major BBS from Galaticomm, Inc. in Fort Lauderdale, Fla., keeps travel data available 24 hours a day.
- A fax server eliminates the need for large numbers of fax machines.
- Several software automation packages, sometimes called software robots, speed the input of reservation data and also check prices and seating.
- Avenue, a conversion utility from White Crane Systems, allows data to be transferred between minicomputer and PC systems.



CW Chart: Janell Genovese

stands PCs, and you have 104 locations, it is very, very difficult to have anything else but consistency and ease of maintenance," Blanco said.

The PC installation quickly grew to the current status of more than 1,000 PS/2s in more than 104 Garber locations worldwide — all supported by Blanco, a programmer, a systems analyst, a minicomputer operator and someone who comes in to perform system backups.

Blanco's "batch file empire" relies on the machines themselves to do much of the work, with the humans simply acting as information brokers who take data on one end, format it to user needs and hand it to the people who need it. "My philosophy is take MIS and instead of having it as MIS information, really manage the information itself," he said. "Put out the appropriate tools for the client base to work with; however, they have the No. 1 voice in terms of what tools they will work with."

Performing this requires a variety of batch files, scripting languages, applications developed in-house and automated applica-

tions designed to keep things simple for both the end user and the IS department. Standardization is less important than using the correct tool for the job in Blanco's realm. For example, databases currently being used or tested at Garber include Borland International, Inc.'s Paradox and

Dbase IV, Microrim, Inc.'s R:Base and Fox Software, Inc.'s Foxpro Version 2.0.

A prime example of the applications developed in-house is Garber's Garbermagic reporting system, which allows commercial clients to call Garber's bulletin board and download their latest travel statistics. A series of batch files then allows users to type three one-word commands to load the new data into Garbermagic. Users can then review a series of standard reports or customize their own to get information on such things as travel expenses, number of trips taken and most-often-used airlines.

Another application uses a software automator to transform the manual process of keying reservation commands into the Sabre system into one performed by computer. In addition to speeding the input of reservations, the system can also use built-in logic to check if a client is

seated in an aisle seat when he requested one by the window or to see if the person taking the reservation actually found the lowest fare.

Small is beautiful

Such automation not only allows Blanco to keep his IS staff small, it also reduces paper flow, cuts down on the number of staff members needed to key in reservations and allows clients to retrieve information for themselves that once would have required assistance from someone inside Garber.

But Blanco is not done. Future projects include a move away from Garber's standard of Lotus Development Corp.'s 1-2-3 to Borland's Quattro Pro, as well as a large database server project using Borland's SQL Link, Paradox and Microsoft Corp.'s LAN Manager.

That server will give in-house users and clients direct access to several gigabytes of travel data, cutting out some data handling steps the IS department currently performs.

OS/2 development tool upgrade bows

BY ROSEMARY HAMILTON
CW STAFF

GPF Systems, Inc. began shipping an upgraded version of its development tool for the IBM OS/2 platform last week.

The launch of GPF Version 1.3 marks a restart for the company as well. GPF Systems had been a division of Microformatic-USA, the U.S.-based development and distribution arm of Microformatic SA in Paris. Late last month, the division was spun off as an independent company and officially began business as GPF Systems last week.

The development tool allows users to design the user interface component of an OS/2 appli-

cation in an interactive, point-and-click development environment. The tool will generate C code, and developers can test prototypes of their designs before compiling code.

The new version will allow developers to create programs for a 32-bit environment.

Windows to come

The company has developed a Windows generator that would allow GPF developers to produce Windows applications, but it is not yet available, said Stefan Kent, director of marketing and sales. "It's going out on a beta basis, but we have no firm schedule" for general availability.

GPF Systems said it also

plans to release a GPF version designed specifically for OS/2 2.0 "early in the first quarter" of 1992, Kent said.

The company, as a division of Microformatic, had sold between 200 and 300 copies of the earlier release of GPF, Kent said. The prior release was introduced in November 1990 and began shipping in volume this past March.

The new company will sell the upgraded development tool for \$995, which represents a huge drop in price from the previous \$3,500 license fee. Kent said the company found long sales cycles to be the norm when selling the \$3,500 product in the corporate market.

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Take a look at just a small sample of the new features you'll find in Version 2.0.

- Full transparent editing of EBCDIC or ASCII data by configuring the file profile.
- Compiler error message support for tight integration between the editor and various compiler workbenches.

- CUT and PASTE using the PM Clipboard — transfer lines to/from other PM applications, even a 3270 session! In DOS, SPF/2 uses its own clipboard to CUT and PASTE.

- Enhanced multi-directory file selection lists with text search and list save/restore capability.

- Expanded printer setup which includes page size, margins, headers and footers, file-name, date, time and page number.

- Additional directory-list line commands such as move, copy, rename, exclude. Includes block versions of all line commands.

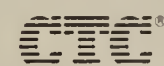
- Text highlighting for program source comments in several languages.

- Word jump and 3270 RESET to further 3270 compatibility with the mainframe.

- Enhanced macro support including an exit macro and macro access to PF key definitions (for OS/2 only).

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Wave of high-capacity disks hits market

BY MICHAEL FITZGERALD
CW STAFF

Driven by software needs, herds of hard drive vendors are producing drives with more and more storage capacity.

Conner Peripherals, Inc., Seagate Technology, Inc., Quantum Corp., Areal Technology, Inc. and Syquest Technology are among the hard drive makers that recently introduced new drives. Users will see these appear in portable, desktop and storage arrays in the next few months.

The market for hard drives is still largely limited to OEMs, with about 15% of hard drives purchased by users who want to upgrade their current systems, according to James Porter, president of Disk/Trend, Inc. in

Mountain View, Calif.

Porter said the crush of drives announced in the Comdex/Fall '91 time frame followed historical patterns.

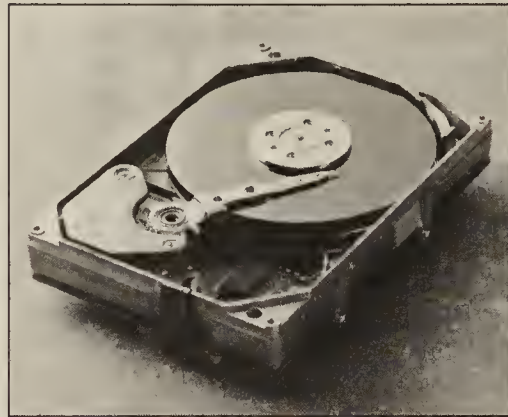
"Each year, capacity is higher, and the box size is smaller," Porter said. "Now we're seeing some striking examples as drive size gets smaller."

Slimmer and smaller

Porter cited the move toward slimmer desktop personal computers as fueling a need for 1-in.-high, 3½-in. drives, and the popularity of portable systems — as well as the push for desktop power in a portable package — for driving the 2½-in. market and creating a 1.8-in. market.

These companies have added to their product lines, generally in established categories of hard

drives, such as 2½-, 3½- and 5¼-in. drives. Conner added hard drives in the 3½-in. category



Move toward slimmer desktop PCs fuels need for smaller drives

ry with dual-actuator ability. Seagate released 5¼-in. drives with as much as 3.5G bytes of unformatted storage capacity

and 3½-in. drives with up to 2.2G bytes of unformatted storage, as well as a 127M-byte 2½-in. drive for the notebook market. Seagate also announced plans to build 1.8-in. drives. Quantum, meanwhile, announced 11 new drives with up to 130M bytes in the 2½-in. form factor, 1.05G bytes of storage in a 3½-in. size, and a 1-in.-high, 3½-in. drive with 450M-byte capacity.

Areal and Syquest are marketing 2½-in. disk drives exclusively for the portable market, the companies said.

Most of the high-capacity, desktop-class drives offer small computer systems interface con-

nections, as opposed to the dominant IDE capability. This presents users who are upgrading their hard drives with the need to buy controller boards as well, according to Kenneth Hallam, president of ENDL Associates in San Juan Capistrano, Calif.

More capacity

Vendors continue to develop ways to stuff more capacity into today's drives. Quantum and Areal, for instance, offer fewer disk platters in their drives than is conventional. (Hard drives store data on disk platters inside the shell. Areal is marketing a drive that will hold 120M bytes of data on two platters — extremely high density.)

According to Porter, sales of 40M-byte drives, long the standard for desktop users, have slipped in the past six months, and by 1995, 100M-byte or larger drives will be the standard for PCs.

COMMENTARY

Chris Lindquist

Some bulletin board worries



Information at our fingertips — that's what the computer game is all about, especially if you subscribe to the (Bill) Gatesian philosophy. And one of the best sources of this information, and occasional misinformation, has to be electronic bulletin boards.

You'd be surprised at the gems that can be unearthed with a little board cruising — though possibly not as surprised as you will be when the phone bill arrives. (Just ask my accounting department.)

Speaking of surprises, those of you out there with Unix net-

works may want to be on the lookout for users practicing for the informal "Most Antisocial Unix Program" contest currently taking place in the *alt.hackers* news group on Usenet. Users are being asked to submit programs intended to reduce Unix boxes to a pile of smoldering silicon. Some pretenders to the title are confessing to having tried the programs on their local systems. The results, while positive from the contest's standpoint, could have system administrators pulling out the few remaining hairs many people in their profession tend to have left.

Unix administrators may have something more to worry about as well. Users in *alt.hackers* also reported a couple of ways to get root privileges on Unix machines that contain a root *setuid* script. Both techniques took only three lines.

And people with Hewlett-Packard HP-UX systems may need to be even more careful. A user reported that he had written a 20-line shell script that al-

lowed him root privileges on any HP-UX machine. The user refused to post the script, though he received plenty of requests, but he did post some hints. The keyword: *Sendmail*.

Apple is simply puffed up with pride about its new Macintosh notebook computer, unveiled recently. It seemed pretty proud of the original portable Macintosh when it arrived, too; unfortunately, users who weren't "properly pumped" had a bit of trouble lugging the thing around without a forklift. This was brought even more into focus when Apple made a point of saying that a Macintosh portable had been brought on one of the space shuttle missions, prompting one Usenet denizen to note that space was probably the only place the weighty Macintosh would truly be a portable.

At least the Macintosh Portable would run available Macintosh software, which is more than can be said for the new Quadra. Users on the boards are reporting that even some standard

software such as Microsoft Word won't run unless the system's cache is turned off — negating most of its speed advantages.

The Windows conference on Relaynet has been carrying a couple of interesting conversations recently. The first apparently began as a discussion on the speed differences between various versions of 1-2-3 (DOS, Windows, OS/2). But it then expanded beyond the realm of PCs to include the VAX/VMS version, which was labeled as being the slowest of all. One user hopped to the product's defense, however, questioning whether the sluggishness was really Lotus' fault. As he put it, "Is it like the dancing bear? The amazing thing was not how well it danced, but that it could dance at all."

The second debate concerned Microsoft's nondisclosure agreement. A user who claimed to be a beta tester was

giving out some information on the speed of Windows 3.1 ("faster on a 386SX than 3.0 on a DX"), the redesigned file manager and TrueType. Comments were restricted to things such as "pretty neat" and "looks very good," but some other beta testers began ques-



tioning whether anything at all could be said legally by someone under nondisclosure. I wonder if any vendors have sued beta testers. Seems like it wouldn't be the best

PR in the world, but then again . . .

Quote of the week: A board user reported that a sales rep from a "three-letter company" had been overheard saying, "You have to be careful not to get locked into open systems." As opposed to being open in proprietary systems, I suppose. Thanks for the warning.

Lindquist is a *Computerworld* staff writer.

DOS interface understands plain English

CONTINUED FROM PAGE 37

derstand what you are saying or needs more information it might say, "I'm stumped. What file on disk A do you want to copy?"

"The goal is to make the computer understand the user, rather than vice versa," Nasson said.

To help iron out colloquialisms and verbal nuances, PC-IQ also offers an input system for adding, modifying and deleting the English commands, thus allowing the user to customize a system to a particular vocabulary or style.

PC-IQ can also serve as a learning tool for DOS neophytes. When the program understands

what you want, it also displays the proper DOS commands. If a user types, "Show me the directory of Drive B," PC-IQ will act as translator and give the correct DOS command (*dir b:*).

"It's like learning to ride a bicycle with training wheels on," commented Donna Lynn Gagliardo, owner of the Southtowns Business Service in East Aurora, N.Y.

Small problems

The program does, however, contain minor drawbacks, according to users. Some complained about its storage re-

quirement of 1.5M bytes and that unessential files may need to be deleted from the disk drive.

Others noted that you must always tell the program whether you are talking about files or directories, or it becomes hopelessly lost.

The program also reportedly has trouble working with Digital Research, Inc.'s DR DOS Version 6.0, but that bug is being worked on.

Users, however, said the trade-off is worth the minor inconveniences. "I never want to go back to a C-prompt command again," Matteson said.

PC & WORKSTATION SHORTS

National Help Desk debuts

Computerland Corp. has created a multivendor technical assistance hot line called Computerland National Help Desk. The service is an expansion of the company's existing hot line, in part using resources acquired through Computerland's purchase of Nynex Business Centers last year.

Corporate Software, Inc. was recently named exclusive sales and services reseller for **Workgroup Systems Ltd.**'s Quetzal help desk automation software. The agreement covers the U.S., Canada, the UK, France and Germany.

A palmtop computing forum is now being offered by **CompuServe, Inc.** Users can join the forum to receive and submit information on specific palmtop computers and portable computing in general. Representatives from several palmtop computer vendors, including **Poqet Computer Corp.** and **Sharp Corp.**, will be available to answer questions.

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Introducing the Dell® 486P/20. A computer that gives you an i486™ SX processor at the price of an i386™ DX machine.

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In short, getting rid of excess wait.

And if that isn't impressive enough, the Dell 486P/20 comes with an upgradeable processor that can go from a 20 MHz i486SX chip all the way up to a high-end 33 MHz i486DX system, and even beyond.

Which, considering that we're talking about a computer under \$2,000, is nothing short of revolutionary.

A true power user's desktop. For its low price, the Dell 486P/20 has a lot of technical innovations you wouldn't expect to find on even higher end machines. Things like programmable Flash EPROMs, for example, that make conventional methods of upgrading system BIOS seem almost obsolete. You won't have to take this computer apart and lose your patience trying to pry out a reluctant chip. Just slip in a diskette — that's all.

Expanding memory is equally convenient. One of the few PCs to support 16 MB SIMMs, the 486P/20 carries 4 memory expansion sockets, on its main board. So as your needs grow, you can keep adding RAM in 1, 4, or 16 MB increments up to a total of 64 MB. That's plenty of room to run your networking software, Microsoft Windows and just about any high-performance graphics application.

And talking about graphics, a small expansion of video memory to 1 MB (512K is standard) will put over 32,000 colors at your disposal, letting you create images that approach photographic quality.

The 486P/20 also makes those images a lot easier on your eyes. It supports up

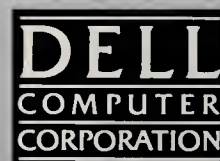
to 1024 x 768 non-interlaced video at a fast 70 Hz refresh rate for a flicker-free display. Unlike the kind you get on some competitive machines that are limited to 60 Hz non-interlaced.

An i486SX processor with the future built in. Because the Dell 486P/20 upgrades via a processor chip instead of traditional processor cards, upgrading takes the form of a single, economical step:

Just remove one chip and replace it with a higher performance version.

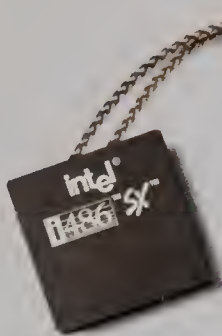
On the other hand, if you never need to upgrade at all, you don't end up having paid a price penalty to get the system in the first place. Either way, you win.

Apart from the processor, the 486P/20 is also designed to allow easy upgrading of hard disks, memory and video capability. So when your needs change, the rest of your computer can, too.



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THE DELL 486P/20 20 MHz i486SX SYSTEM.*
SYSTEM INCLUDES 50 MB HARD DRIVE, VGA COLOR MONITOR, AND 2 MB RAM.

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If your requirements call for a more powerful or specialized system than the one we've just mentioned, here's an amazing fact: feature for feature, you can get an even better deal with our higher-end i486 systems. From \$248 all the way up to a whopping \$1,348, your savings increase with the sophistication of the Dell System[®] you buy. So go ahead, read on. And if you still have any doubts, call us. We'll be happy to explain how the more our i486 systems cost, the less they actually cost.

MORE VALUE

The Dell 486P/20 is a 20 MHz i486SX general purpose workstation you can upgrade to 33 MHz and beyond.

For a configuration that costs so little, you sure get a lot.

Like programmable Flash EPROMs for easy BIOS upgradeability.

And an 80 MB hard disk drive with 15 ms access time.

And an 8 KB cache built into the processor for increased throughput.

And 4 MB of RAM on 32-bit SIMMs with gold-plated connectors for greater reliability.

And 2 floppy drives.

Surprised? Keep reading.

You'll also get a 1024 x 768 14" color monitor with long persistence phosphors.

And the power to display 32,000 colors simultaneously, if you expand video memory to 1 MB.

And factory-installed MS-DOS[®] 5.0 and Microsoft Windows 3.0.

And a Microsoft Mouse.

And, considering it's from Dell, a whole lot of peace of mind.

That, by itself, is worth a fortune.



THE DELL 486P/20 20 MHz i486SX SYSTEM.^{*}
SYSTEM INCLUDES 80 MB HARD DRIVE, SUPER VGA (1024 x 768) COLOR MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

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MORE PRODUCTIVITY

The Dell 486D/25 is a sophisticated productivity workstation that was designed with your future in mind. To upgrade from a 25 MHz i486SX processor to a faster processor when available, all you'll need to do is replace a processor chip. Not a card. And starting with 4 MB, you can keep adding RAM up to a maximum of 64 MB.

This new system is priced on par with 33 MHz i386DX machines, yet performs up to 40% faster. And its sheer processing power is amply backed by a 100 MB hard drive with a 32 KB cache for increased throughput. A dual floppy drive completes the excellent storage arrangement.

A 1024 x 768 14" color monitor with a 70 Hz refresh rate gives you a flicker-free display. With 32,000 colors, if you make a small expansion of video RAM. Should anything go wrong, the built-in SmartVu[™] diagnostic display can find the problem, even if the monitor goes down.

The 486D/25 comes with six expansion slots and five drive bays for added flexibility. You'll also get factory-loaded MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486D/25 25 MHz i486SX SYSTEM.^{*}
SYSTEM INCLUDES 100 MB HARD DRIVE, ULTRASCAN[™] 14C MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

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MORE SPEED

From desktop publishing to spreadsheet applications, there's one feature that's always welcome, and that's speed. With quick recalcs and lightning fast screen refreshes, you'll get your work done faster with the Dell 486P/33.

The 33 MHz i486DX processor generates up to 80% more performance than 33 MHz i386DX systems. If that leaves you craving for more, you can upgrade to a faster i486 processor when available.

This 486P/33 configuration features a 100 MB hard drive with a phenomenal 15 ms average access time. An 8 KB cache in the processor boosts performance. And dual floppy drives allow you to read any diskette, regardless of MS-DOS format.

A 1024 x 768 non-interlaced big 15" color monitor with overscan gives you 30% more viewable area than the standard 14" you get with any competitively priced system. For even more versatility on desktop publishing or graphic-intensive applications, just expand video RAM to 1 MB and you'll get a 32,000 color, near-photograph quality display.

The system comes with 4 MB RAM on 32-bit SIMMs with gold-plated connectors, MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486P/33 33 MHz i486DX SYSTEM.^{*}
SYSTEM INCLUDES 100 MB HARD DRIVE, ULTRASCAN 15C MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

SAVE \$948[▽]

MORE GRAPHICS

The Dell 486D/33 has every high-end feature you'd expect in an outstanding graphics workstation. Except a high-end price tag.

There's a superfast 33 MHz i486DX processor, with 8 KB internal cache. For even greater performance, all you'll need to do is replace a processor chip. So you can upgrade inexpensively as soon as new chips hit the market.

Should your workload, heaven forbid, triple by then, you'll still find the 200 MB hard disk more than adequate.

And as your requirements become increasingly more sophisticated, you can keep adding to the 486D/33's 8 MB RAM. With a maximum of 64 MB, there's plenty of room to grow.

Talking about room, we have a large 15" flat square monitor with 30% more viewable area than a standard 14" monitor, which makes those large spreadsheets and high resolution documents much easier to read.

The Dell 486D/33 comes with factory-loaded MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486D/33 33 MHz i486DX SYSTEM.^{*}
SYSTEM INCLUDES 200 MB HARD DRIVE, ULTRASCAN (1024 x 768) 15C MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 8 MB RAM.

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Gold-plated SIMMs increase system reliability by eliminating connection-related errors.

There are plenty of companies anxious to sell i486 systems at a low price. All they really need is a supply of parts (the cheaper, the better) and a garage to assemble them in. Once the "production line" gets going, they place



The 486P/20 is one of the few computers to feature 16 MB SIMMs.

At Dell, on the other hand, we offer lower prices by cutting down on traditional retailer mark-ups, not quality. In fact, we're almost fanatical about the quality of every machine that leaves our state-of-the-art factory. That attitude is reflected in the way we design, test, manufacture and ship our i486 systems.

a few ads in the paper. After that, of course, it's anyone's guess as to which will last longer: the computer or the "company" it came from.



Our Black Box test makes sure your Dell computer never arrives this way.

To see how our i486 systems stand up to air delivery, we use a Black Box. Or, in

technical parlance, a portable accelerometer/thermometer. This little device is fitted into a test computer which we then send out through regular delivery channels, much as if you had ordered it yourself. When we bring it back, the "Black Box" tells us exactly what the computer went through, in terms of shock, vibration and temperature. This innovative test is part of a series that's been so

successful in helping us improve our packaging, we've won an international award for package design.

To make our computers more reliable, we cook them. After our computers are fully assembled and configured, randomly selected units are "burned-in" and tested at 104°F

In perhaps the most grueling temperature test we've ever come up with, pilot Dell systems must survive a storage chamber where temperatures vary rapidly between -40°C and $+60^{\circ}\text{C}$.

JUST BECAUSE YOU PAY LESS DOESN'T MEAN YOU GET LESS.

Our computers have a heart of gold.

At Dell, we take quality consciousness so seriously, we fit our i486 systems with SIMMs that have gold-plated connectors. If you're wondering what such expensive components are doing in relatively inexpensive computers, the answer is simple: they cost us a bit more, but by eliminating connection-related errors, they're worth their weight in gold.

It's exactly this kind of commitment to quality control that's enabled us to meet CSA, UL, TUV-GS, FCC and VDE standards, earning worldwide regulatory approvals.

There are thousands of ways to use a Dell i486 system. Dell i486 systems are tested for compatibility with major

peripherals, software applications, network topologies and network operating systems, including Banyan and Novell, in several hundred permutations per system. They're

even tested for AS-400 connectivity. So you can use our machines in virtually any environment.

50% fewer opportunities for things to go wrong. After the traditional computer manufacturer builds a system,

it goes to the dealer, who then does his own configuring. That's 2 stages of manufacturing, which means twice as many opportunities for things to go wrong.

A Dell i486 system, on the other hand, is manufactured only once. We custom-configure memory boards, network cards and advanced video, testing the system as a unit.

We even load select software packages you buy from us, at no cost to you. That includes MS-DOS 5.0, Microsoft Windows 3.0, and many popular applications programs.

With 20 diskettes and 2 hours to load and configure just one system, imagine the time you'll save and the potential hassles you'll avoid. Which gives you yet another reason to buy a Dell i486 system:

When you open the box, you're ready to go.

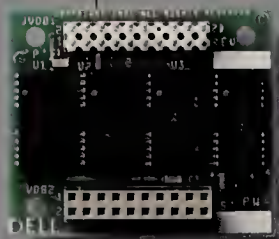
Random Dell computers are "burnt in" at 104 degrees Fahrenheit.

And if you think that's rough, consider our shock test. Sample i486 computers are strapped to a guillotine-like apparatus which repeatedly drops them to the

ground. This tells us what we can do to improve their shock tolerance level.

Our power supply units undergo an equally rigorous quality control process. In a test that simulates several years of actual usage, randomly selected test units are switched on and off 1,200 times; only then can they be approved.

While our testing may seem a little extreme, it's based on a rather simple fact: if our machines don't fail with us, they haven't much chance of failing with you, either.



A small expansion of video memory gives you over 32,000 colors for a near photographic quality display.

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WE THINK A COMPUTER SHOULD COME WITH MORE SUPPORT THAN THIS.

As a potential buyer, you'll receive lots of attention from most computer companies. Until they receive your check, that is. For all practical purposes, once the sale is closed, so is the company.

At Dell, on the other hand, half our story begins after you receive your computer. Despite our low prices, we've built a reputation for the highest level of support in the industry.

To begin with, a Dell expert works with you to figure out which computer, with which options, works best for you. We help you arrange financing from a

wide variety of credit, lease and lease-to-buy plans. Then we test, pack and ship your

personalized

personal computer to you via two-day air standard.

In the unlikely event that you have a problem with your computer, it won't last long. Our technical support staff solves 90% of reported problems over the phone. Usually in six minutes or less.

You can also get technical help 24 hours a day via our innovative TechFaxSM line. Just dial up and detailed system information

will be automatically faxed back to you from the Dell Technical Library.

We even have a special section on CompuServe's PC vendor forum. So you can view other users'

problems, and, more importantly, our solutions. But what makes our bulletin board special is that we constantly monitor what goes on there. Which means we can keep track of any small problems, and stop them before they become big ones.

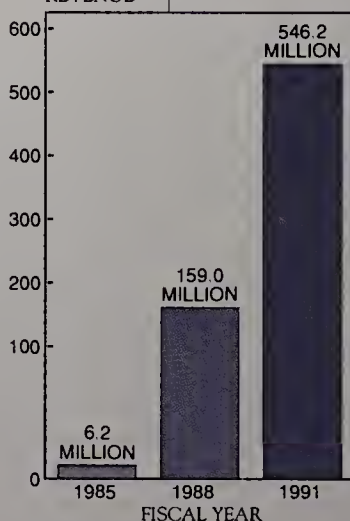
But what if you have a problem that just can't be solved over the telephone?

On-site service is an ambiguous term.

To some enterprising vendors, it conveniently means that the replacement parts, and not the service technician, will arrive on-site. Which isn't as crazy as you may imagine; there are any number of do-it-yourself computer whiz kids in this business.

If you don't count yourself among their

REVENUE



Dell has built a \$546 million dollar business by building a relationship with every customer.

rank, you'll prefer Dell's way of supporting our machines.

If needed, a trained technician can be at your home or office with a solution in hand, usually by the next business day.^Δ

What's more, every time you call Dell Tech Support an entry is made in our customer database. So over time, we'll know your computer as well as you do. Maybe even better.

And you get all this support without getting

a bill. Because the price of your system includes on-site service coverage for a year, and phone support forever.

Buy a computer and get the company.

By standing firmly

behind every machine we've ever sold, we've built up a \$546 million company in just seven years, one customer at a time.

On the way, we've acquired quite a following. For example, the editors at PC Week have described the Dell service and support package as "overkill." J.D. Power and Associates[®] ranked Dell "Best PC in Customer Satisfaction in Small to Medium Sized Businesses."

We've won PC Week's Customer Satisfaction Poll an unprecedented eight times.

And in the last 12 months alone, we've collected 53 product awards, including PC Magazine's Editor's Choice, InfoWorld's Buyer's Insurance and PC World's Best Buy and World Class Awards.

And it's not just the smaller users that are satisfied, either: Dell computers are now used

by over two-thirds of the FORTUNE 500[®]. Overseas, it's been pretty much the

same story. We've more than doubled our overseas sales in the last 3 years in a row, and won in customer satisfaction surveys in the UK, Germany and France.

Still can't decide? Take 30 days to make up your mind. Within that time, if you aren't completely satisfied, just

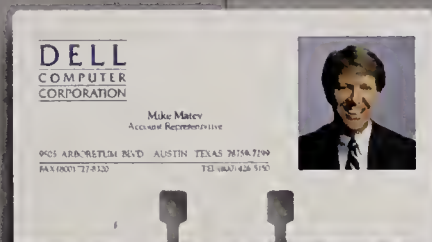
return your Dell system and we'll refund your money, no questions asked.

We're proud to add, though, that this unconditional

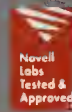
guarantee has been used so sparingly, only 1.2% of the over half a million computers we've sold so far have ever come back.

What does keep coming back, in ever increasing numbers, are our customers. Over 70% of the people who buy a Dell computer buy another. That's perhaps the strongest statement of satisfaction any manufacturer could ever hope to receive.

So before you buy an i486 system, ask



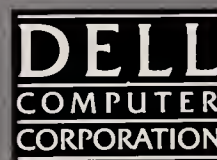
Every Dell Computer comes with a trained computer staff who knows your computer as well as you do. Maybe better.



Our 53 product awards in 1991 alone make Dell one of the most awarded PC companies in the world.

around; there are plenty of Dell users out there. And if there's anything you need, call us. But you'd better hurry.

Great computers may last a long time but great deals don't.



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Last year, Dell won customer satisfaction polls in the U.S., U.K., Germany and France.

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☐ i486SX, 25 MHz
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☐ i486, 50 MHz

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☐ ISA

CHASSIS

- ☐ Small Footprint
☐ Mid-Size
☐ Floor-Standing

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☐ 5.25"

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☐ 8 MB
☐ 16 MB

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☐ 80 MB
☐ 100 MB
☐ 200 MB
☐ 320 MB
☐ 650 MB
☐ Other

MONITORS

- ☐ VGA Color, 14", 640 x 480,
 .39mm dot pitch
☐ VGA Color Plus, 14",
 640 x 480, .31mm dot pitch

- ☐ Super VGA Color, 14",
 1024 x 768, 28mm dot pitch

- ☐ UltraScan 14C, 14", 1024 x 768, .28mm
 dot pitch non-interlaced, 70Hz

- ☐ UltraScan 15C, 15", 1024 x 768, .28mm
 dot pitch non-interlaced, 70Hz

- ☐ GPD-16C, 16", 1280 x 1024, .31mm dot pitch

- ☐ GPD-19C, 19", 1280 x 1024, .31mm dot pitch

OPERATING SYSTEMS

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☐ MS-DOS 4.01
☐ MS-DOS 5.0
☐ MS-OS/2 1.21
☐ Dell UNIX® System V

OTHER (i.e.: tape drive, network card,
 mouse or modem)

Name _____

Title _____

Company _____
(If Applicable)

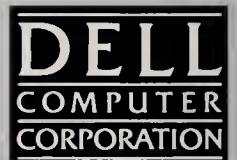
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Wordstar for Windows: Outstanding control

Technology Analysis — A roundup of expert opinions about new products. Summaries written by freelance writer Suzanne Weixel.

Wordstar International's Wordstar for Windows includes familiar commands and emphasizes layout and design.

Performance: Because Wordstar for Windows uses lots of system resources, dealing with documents is painfully slow, reviewers said.

Ease of use: The package includes a straightforward intuitive interface featuring an icon ribbon. This feature is convenient but not customizable.

Editing capabilities: Basic editing functions are solid, but it is the what-you-see-is-what-you-get page layout and large document management that make the program. The package offers outstanding control of text and graphics. However, some menus and windows cannot be moved to reveal flagged words; undo and spell checker work only in page layout.

Windows compatibility: The package includes complete two-way support for Dynamic Data Exchange. But there is no support for the multiple-document interface.

Value: If you are looking to get into the Windows environment, or you are a desktop publisher who needs word processing capabilities, Wordstar for Windows is well worth its \$495 price.

Wordstar's Wordstar for Windows

Reviews	Performance	Ease of use	Editing	Output	Windows compatibility	Overall value
<i>Infoworld</i> 9/30/91	NC	Good user interface	Robust text control	Almost desktop publishing	Can imitate DDE links	Quite a comeback for Wordstar
<i>PC Week</i> 10/7/91	Consistently lagged in lab tests	Lacks multiple document interface	No MS Word filter	Dazzling array of WYSIWYG features	Comfortable for users	Solid first step into Windows
<i>PC Magazine</i> 11/26/91	Fast for text, slow for files	Different modes may be confusing	Easy basic editing	Rich in features	Good for Wordstar DOS users	Improved version of Legacy
Users						
Doug Savary, Net Co.	■	■	■	■	■	■
David Woodling, Network Centre, Inc.	■	■	■	■	■	■
Robert Allen, Lonesome Valley Publishing	■	■	■	■	■	■
Analysts						
Ronni Marshak, Patricia Seybold's Group	■	■	■	■	■	■
Peter Francis, Dataquest, Inc.	■	■	■	■	■	■
Amy Wohl, Wohl Associates	■	■	■	■	■	■

Key: ■ Very good ■ Good ■ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial ratings

Analysts	Short-term performance	Long-term stability
Brian Swift, Security Research Associates, Inc.	■	■
Alfred Tobia, Mabon Nugent & Co.	■	■

First-quarter 1992 (ending in September) results for Wordstar were the following: revenue of \$11 million, compared to \$9.4 million for the same period in 1991; and net profit of \$40,000, compared to a net loss of \$13,000 for 1991.

Wordstar responds

Alex Hoag, director of marketing:

Performance: Slowness often is due to the high degree of layout functions used in the document.

Ease of use: We chose not to include a customizable tool bar because our customers told us that they do not want a shifting interface.

Windows compatibility: Support for multiple documents is a high priority for us right now.

Lotus' Ami Pro offers 'endless' editing tools

Lotus' Ami Pro 2.0

Reviews	Performance	Ease of use	Editing	Output	Windows compatibility	Overall value
<i>Infoworld</i> 10/14/91	Excellent	Excellent	Very good	Excellent	NC	Excellent
<i>PC Magazine</i> 11/12/91	Most powerful	Most intuitive	Has every feature needed	Powerful	Integrates with other applications	Most powerful and enjoyable
<i>PC World</i> 8/91	Powerhouse features	Elegant interface	Adds group editing features	Sophisticated graphics	Improved	A premier word processor
Users						
Joe Ruzkiewicz, NCR Corp.	■	■	■	■	■	■
Matt Edelstein, Information Projects Group, Inc.	■	■	■	■	■	■
Harvey Rose, Shearson Lehman Brothers, Inc.	■	■	■	■	■	■
Analysts						
Ronni Marshak, Patricia Seybold's Group	■	■	■	■	■	■
Peter Francis, Dataquest, Inc.	■	■	■	■	■	■
Scott Higgs, National Software Testing Lab, Inc.	■	■	■	■	■	■

Key: ■ Very good ■ Good ■ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial ratings

Analysts	Short-term performance	Long-term stability
Carlo Cannell, Gruber and McBaine	■	■
Alfred Tobia, Mabon Nugent & Co.	■	■

Third-quarter results for Lotus were the following: revenue of \$218.8 million, a 37% increase over 1990; and net income of \$21.5 million, a 151% increase over 1990's third-quarter income of \$8.6 million.

Lotus responds

Bill Jones, director of product marketing:

Performance: The minimum system requirement is a 386SX with 2M bytes of random-access memory. We hope to cut it down in the future.

Ease of use: The macro and dialog editor documentation is on-line.

Editing capabilities: It is better to underline tabbed spaces manually.

Lotus Development Corp.'s Ami Pro 2.0 offers strong layout and graphics support, taking Windows-based word processing into a new dimension.

Performance: Because the program is large and complex, it consumes a lot of disk and memory.

Ease of use: Ami Pro features what-you-see-is-what-you-get (WYSIWYG) editing, icons and a button bar, making it easy to use. The well-designed interface is also highly customizable. There is a macro language and dialog box editor as well. The printed documentation for both must be purchased separately for \$9.95 as part of a developer's kit.

Editing capabilities: Ami Pro's editing capabilities are endless. In addition to the usual functions, there are layout tools, graphics utility features, formula editing and support for frames. Edit modes include WYSIWYG and large or small text. Minor inconsistencies include the inability to underline blank spaces created with a tab and to use footnotes and endnotes in the same document.

Windows compatibility: In addition to its interface, Ami Pro 2.0 makes good use of features such as the multiple document interface and Dynamic Data Exchange.

Value: Ami Pro's flexibility and depth of functionality make it a good buy at \$495.

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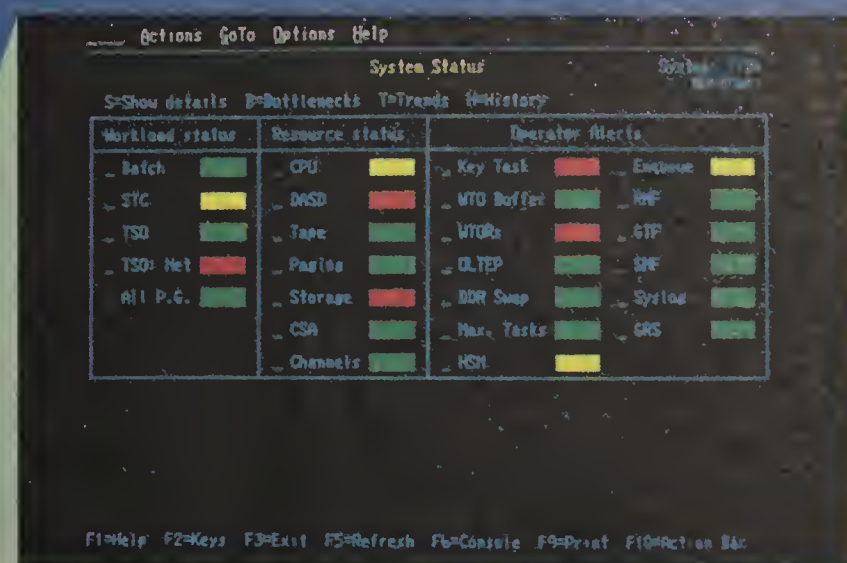
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Software applications packages

Spinnaker Software Corp. recently began shipping PFS:Write, a DOS-based word processing package.

Users of PFS:Write can edit documents in an accurate, graphical preview mode. It includes a spell checker, dictionary and thesaurus.

The software costs \$129.
Spinnaker Software
 201 Broadway
 Cambridge, Mass. 02139
 (617) 494-1200

Videotex Systems, Inc. has upgraded its T-Base imaging library.

T-Base Version 3 incorporates picture and document images into database applications. It supports the PCX file format. Enhancements include automatic and on-the-fly image scaling and improved display support. Displays of up to 1,024 by 768 pixels are also now supported.

T-Base costs \$495. It is being bundled with the company's Chromatools color editing utility at no extra cost.

Videotex Systems
 Suite 205
 8499 Greenville Ave.
 Dallas, Texas 75231
 (214) 343-4500

Software utilities

Mastersoft, Inc. has developed Version 5.0 of its Word for Word Professional file conversion software.

Word for Word Professional now supports more than 90 file formats. The product includes such features as selective range spreadsheet conversion, database and mail merge conversion and a new user interface. It also supports a number of Apple Computer, Inc. Macintosh formats. The product costs \$149.

Mastersoft
 Suite A-320
 6991 E. Camelback Road
 Scottsdale, Ariz. 85251
 (602) 277-0900

Maynard Electronics, Inc. has begun shipping Fastape Version 5.0.

The backup software utility now offers a menu-driven user interface. It also features password protection, unattended backups and subdirectory options.

Fastape 5.0 is included with the company's Fastape backup hardware systems. Users of previous versions can upgrade for \$49.

Maynard Electronics
 36 Skyline Drive
 Lake Mary, Fla. 32746
 (407) 263-3500

OS/2 software

Caseworks, Inc. has released Case:PM for OS/2 2.0.

Case:PM allows developers to build prototype application interfaces under Presentation Manager. It then generates code in C language, C++ Commonview and Cobol. Under OS/2 2.0, Case:PM generates 32-bit code, the company said.

The product costs \$3,495.

Caseworks
 Suite 130
 1 Dunwoody Park
 Atlanta, Ga. 30338
 (404) 399-6236

Macintosh products

Tenon Intersystems, Inc. has released the Mach Ten Development System, which allows Apple Computer, Inc. Macintosh systems to develop Unix applications.

The Mach Ten kernel system enables users to run existing Macintosh applications along with Unix programs. It does not require alteration of disk partitioning or device drivers.

The development system includes a C language compiler, C preprocessor and a set of compiler libraries along with other development tools.

The product costs \$395.

Tenon Intersystems
 1123 Chapala St.
 Santa Barbara, Calif. 93101
 (805) 963-6983

Outbound Systems, Inc. has reduced pricing for its Apple Computer, Inc. Macintosh-compatible portable computers.

A Motorola, Inc. 68000-based Outbound Notebook System with 4M bytes of memory and a 40M-byte hard drive now costs \$2,899. The Outbound 2030/440, based on the 68030 processor, costs \$3,499; with a 60M-byte hard drive, it costs \$3,899.

Outbound Systems
 4840 Pearl East Circle
 Boulder, Colo. 80301
 (303) 786-9200

Development tools

Gimpel Software has announced Version 5.0 of PC-Lint, its C language source code analysis software.

PC-Lint now includes a Strong Type checking feature and a control flow-based analysis of variable initialization. It analyzes across multiple code modules, the company reported.

The product costs \$139 and runs under DOS and OS/2. An advanced version, PC-Lint 386 5.0, is available for \$239.

Gimpel Software
 3207 Hogarth Lane
 Collegeville, Pa. 19426
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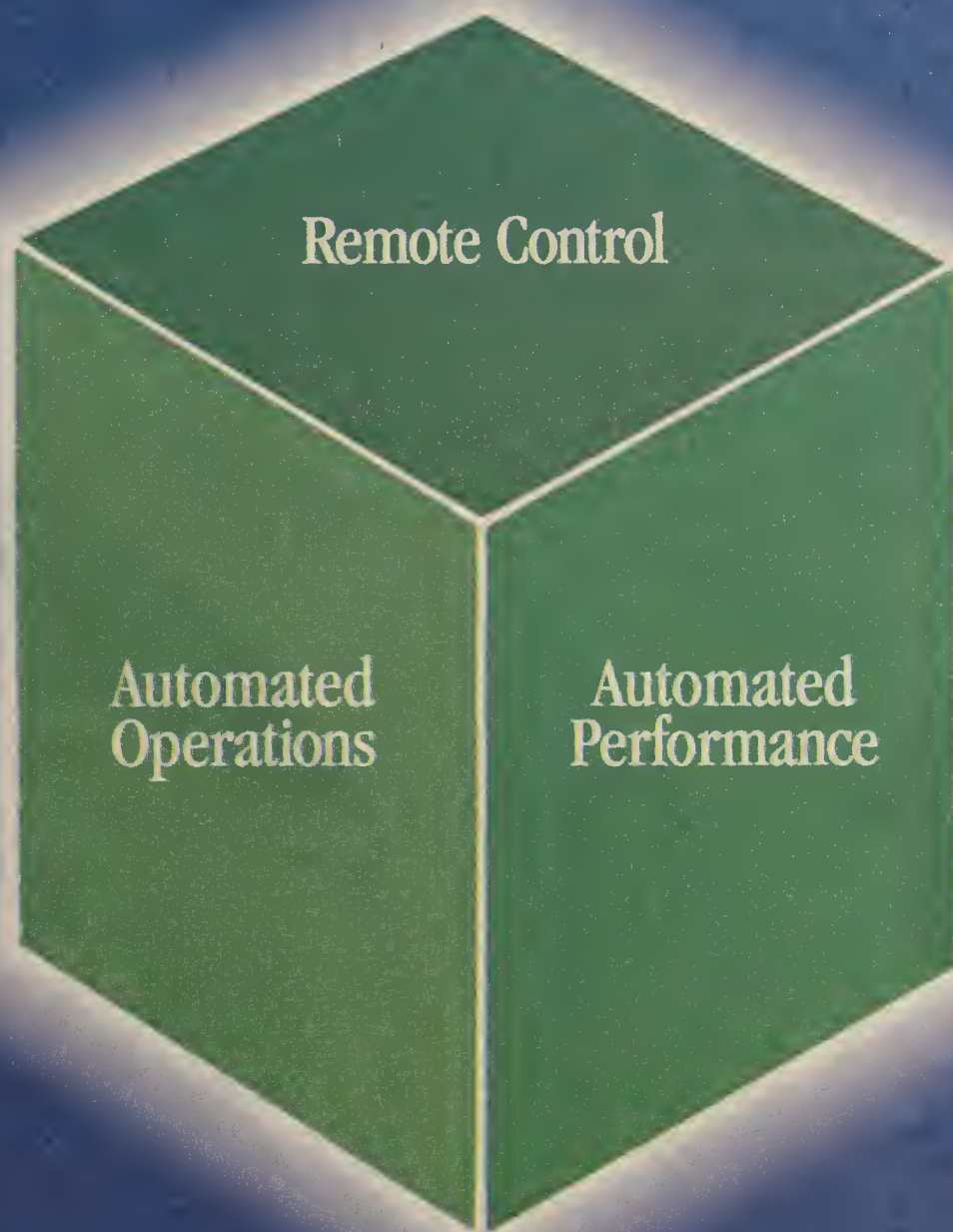


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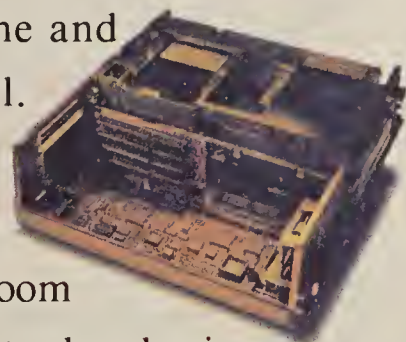
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COMMENTARY

Joanie M. Wexler

Key E-mail spec on deck



Users stumbling across such new electronic-mail acronyms as OMI and MAPI really need to know just two things. First, these are nascent application programming interfaces (API), so they do not compete technically with X.400 as a message transport engine. However, they will eventually rival the X.400 API Association's spec known as X.API, now the only interface available for linking applications to X.400 transport systems.

The second key point is that if industry bigwigs can come to terms on a common API — be it Lotus' OMI, Microsoft's MAPI, Novell's MHS (also a transport mechanism) or a superset of X.API — users will have fewer mail gateways to support and will thus save money as their E-mail networks grow.

Those three vendors and others reportedly met on the sly last week at Microsoft headquarters to hash out the second issue. Keep your fingers crossed for progress.

What these companies are squabbling about is a standard interface for linking the next class of enterprise applications — which will come bundled with store-and-forward E-mail services — with a given LAN's underlying messaging transfer protocol. That transfer protocol could be X.400, Novell's widespread Message Handling System (MHS), Lotus' CC:Mail

Continued on page 53

Bank recasts IS concepts for net design

ON SITE

BY ELISABETH HORWITT
CW STAFF

NEW HAVEN, Conn. — While information systems and telecommunications divisions do not always get along, the more advanced thinkers in both groups are finding out the benefits of exchanging information — and with a little vendor help, even management products.

For example, John Snopkoski, telecommunications manager at Union Trust Co., caught sight of a graphics-based configuration management package in use at his company's computer room and immediately coveted it.

"I saw our computer manager designing his own computer room, and I said, 'Hey, maybe I

can use this for my network,'" Snopkoski reported. "I started playing around with it. Everyone [in telecommunications] wanted to see my pictures."

The package — Graphic Data Center Manager from Graphic Management Group, Inc. — was not meant for networks, according to Robert Trenck, director of marketing at the Valhalla, N.Y., vendor. Rather, it was designed to allow data center managers to plot out various attributes of the various systems within a data center, including system type, cooling requirements and leased vs. purchased equipment, Trenck said.

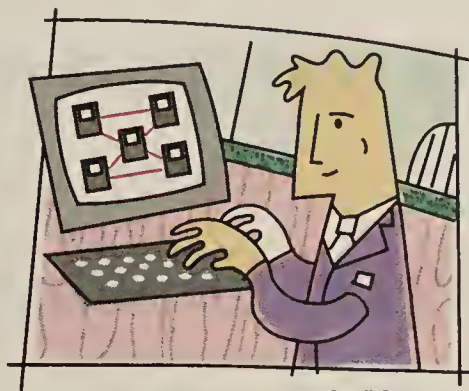
At the urging of users such as Union Trust, however, Graphic Management developed a network version of its data center product.

Snopkoski provided his input for Graphic Net-Worker, the package that Graphics Management finally came up with. Like its sister product, it provides a

The database is linked to an icon-based graphics package that can present the location and interrelationships of various types of equipment on a detailed topological map. When equipment is added or re-configured, the user can make the change on the map and have it reflected in the database — or vice versa.

Union Trust began using the package several months before it was officially announced this fall. Now, Graphic Net-Worker is in "full-blown use within the company," Snopkoski said. While unable to provide hard cost-benefit numbers, Snopkoski said, "it saves a lot of time running back and forth. One

Continued on page 52



Janell Genovese

database of all relevant equipment — in this case, the wiring, boards, hubs and other equipment used for communications within a company.

NSF to solicit backbone operators

Agency will seek multiple bids for NSFnet, as well as 'traffic cop,' in May

BY GARY H. ANTHERS
CW STAFF

WASHINGTON, D.C. — Seeking to balance the goals of increased competition and network reliability, the National Science Foundation (NSF) will increase the number of organizations operating the NSFnet backbone from one to at least three when its five-year network management agreement with Merit, Inc. runs out next November.

In May, the NSF will mail out bid solicitations for operation of the NSFnet backbone, a 45M bit/sec. fiber-optic backbone that is at

the heart of the 3 million-user global Internet. Awards will be made a year later to two or more "connectivity providers," those that furnish and operate tele-

communications circuits and packet switches, said Stephen Wolff, director of the NSF's Networking Division.

Simultaneously, the foundation will solicit bids for an "Internet routing authority," a sort of traffic cop that determines how data gets routed over the network by maintaining a database of dynamic packet-routing algorithms. Although Merit now performs both functions, the organization picked for traffic arbitration must not be one of the connectivity providers, a move designed to keep the provider from favoring its own user community, Wolff said.

"Control of routing is control of stability in the network," Wolff said. "Users expressed a great desire for reliability, and one way to do that is to maintain

tight control over routing authority." Reliability is a nontrivial issue in a network that is rapidly evolving from 1.5M bit/sec. speeds to 45M bit/sec. and beyond while it simultaneously is seeing an explosion in traffic volume (see chart).

"I doubt [users] will see any difference in cost," Wolff said. "We hope the service will only get better, but otherwise, it will be invisible, the way a network should be."

The connectivity vendors will share an estimated \$15 million over three years, and the routing authority vendor will pick up about \$3 million over that time. Wolff said bids on either solicitation could come from the long-distance carriers, the regional Bell telephone companies, one of the specialized Internet service providers or from "some consortium we've never heard of." The existing agreement with Merit is likely to be extended for a period

Continued on page 56

Tera growth

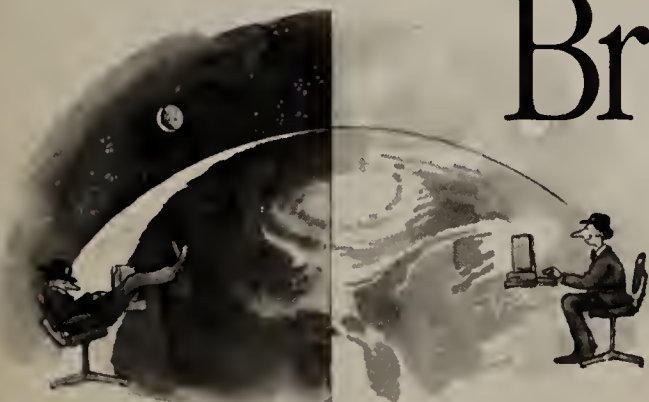
The NSFnet backbone is well on its way to the 4T-byte traffic level

Month	Gigabytes
Oct. 1992*	4,000
Oct. 1991	2,254
Oct. 1990	1,050
Oct. 1989	390
Oct. 1988	72

*Estimated

Source: National Science Foundation
CW Chart: Janell Genovese

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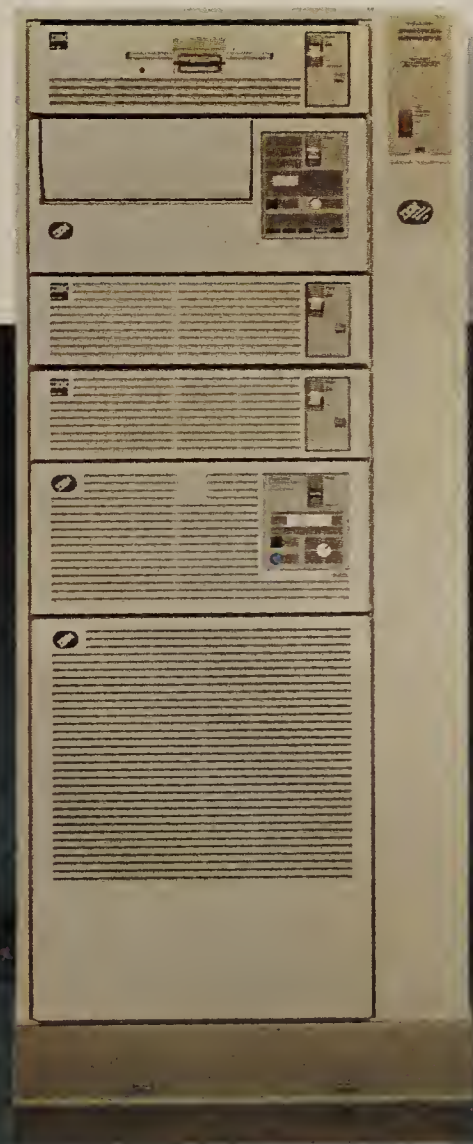
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Rochester gives Windows users AS/400 access

BY SALLY CUSACK
CW STAFF

ROCHESTER, Minn. — Rochester Software Connection, Inc. recently launched a software product aimed at personal computer users who would like to access IBM Application System/400 systems in a Microsoft Corp. Windows 3.0 environment.

Dubbed Showcase Vista, the product targets nontechnical managers, providing them with an easy-to-use graphical user interface for data retrieval in AS/400 resident databases.

Mike Hansen, senior director of information systems at Chemical Waste Man-

agement, Inc. in Oakbrook, Ill., has beta-tested the program.

Hansen said the company had looked at several other end-user reporting tools in the AS/400 environment, and this "seemed to fit the bill." According to Hansen, a major benefit of the software is that it gives end users access to the AS/400 database in a Windows point-and-click environment.

Chemical Waste is currently using the product as a prototype application between the Microsoft Excel spreadsheet and the AS/400 database for integration and what-you-see-is-what-you-get output on a laser printer.

Showcase Vista integrates Microsoft's Windows, Excel or Word, Lotus Development Corp.'s 1-2-3 or any other Dynamic Data Exchange-capable application to format data quickly. It supports file transfer as well as the SQL interface for complex query functions. It also features standalone report formatting without the use of a spreadsheet.

The software does not require SQL licensing on the AS/400, the vendor said.

Technical but transparent

According to Jim Louys, a partner at ADM, Inc. in Cheshire, Conn., prospective customers still need some technical

expertise to get Showcase Vista up and running. However, Louys said, once the software is in place, end users can query and incorporate results into most Lotus formats transparently.

"They are really going after the large accounts that recognize they need a desktop strategy for AS/400 success," said Louys, adding that this would incorporate the top 15% of the AS/400 market.

Showcase Vista is priced from \$995 for a single user license. Minimum system configuration includes any model IBM AS/400 with OS/400 Release 3.0, PC Support Release 3.0 and an Intel Corp. 80286-based processor with a 20M-byte hard drive, Video Graphics Array-capable monitor and 2M bytes of random-access memory.

Bank recasts IS concepts

CONTINUED FROM PAGE 49

benefit is not having to go to a site to see what's there. Another is not having wrong information."

The biggest value of the package is that it provides a consistent database for the data center and telecommunications sides of Union Trust, Snopkoski said.

"Both departments had accumulated their own database. It was very difficult to go back and forth to see who was right and who was wrong" in those nebulous areas where data center and telecommunications overlap, such as building wiring and data communications circuits, he said.

Paper pushers

Data center operations people, who tended not to have any training in telecommunications, were still using the paper sheet method of keeping track of their circuits — even though they were using Graphic Management's tool to keep track of their systems, Snopkoski said. "You read a piece of paper, you have no notion of how everything is linked together; so I figured a picture would be worth 5 million words."

Using Graphic Net-Worker, Snopkoski drew data center managers lots of pictures. "You can see how a line goes, how it is routed and terminated. You can click on a [bank] branch and see all pertinent information," zooming in on floor details, down to specific modems and what attaches to them, Snopkoski said.

Snopkoski is now in charge of maintaining the network management system for both telecommunications and data center operations.

"When I have an order for a new line, I put that in a different color, so they know it's going in. Before, they wouldn't know till I told them," Snopkoski said.

The product is also used to keep track of local-area network configurations and for building-service people who want to keep track of what is in a given cubicle when they move people, Snopkoski said.

The next step for Snopkoski is to "somehow develop an interactive approach with my telephone vendors: give them a copy of the package." That way, he said, the carriers can give Union Trust updated information about circuit configurations and even supply alternative, money-saving scenarios such as a new tariff or route. "I'm trying to get all my vendors to use this."

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NETWORK SHORTS

Sprint pushes videoconferencing

Square One, a program recently introduced by U.S. Sprint Communications Co. subsidiary Sprint Video, was designed to assist customers in the introduction, implementation and internal promotion of videoconferencing, Sprint said. A key element of the program is generating enthusiasm for videoconferencing among reluctant employees by showing them how such applications can increase productivity and reduce travel time and expenses, according to the carrier. The turnkey

program sells for \$3,000 per site and covers a 90-day period.

Auspex Systems, Inc. in Santa Clara, Calif., has introduced a streamlined pricing policy that sets a fixed monthly service and support charge for each of its Network File System server products, regardless of the system's hardware or software configuration. The Auspex Premier Service program provides 24-hour-a-day service availability in more than 30 major metropoli-

tan areas in the U.S. and Canada, the vendor said.

Hewlett-Packard Co. and **Simpact Associates, Inc.** have codeveloped a product called Remark that is said to provide voice integration for HP New Wave 3.0 for Windows. The product allows users to create, edit and play back voice messages on an HP New Wave desktop manager, HP said. It is said to require no additional hardware and to work with existing IBM-compatible personal computers, telephones and local-area networks. Prices range from \$5,500 to \$20,000, including LAN interface software.

Wexler

CONTINUED FROM PAGE 49

or a number of others.

For users, a common interface would mean that they wouldn't need the expertise or funds to manage different gateways on each LAN running a different local E-mail system. For developers, it would mean that the mail-enabled applications they create would only have to be written to a single interface.

Lotus' fledgling Open Messaging Interface (OMI) — announced in September and officially backed by IBM and Apple — is Lotus' proposed standard. It is the vehicle the company has used to bundle E-mail with other groupware functions in its popular Notes package. Specifications for OMI and its potential competitor, the Windows-based Microsoft Application Programming Interface (MAPI), are still being fleshed out. In its current form, for example, OMI is only equipped to map to CC:Mail, Lotus' own message transport engine.

Lotus' first OMI developers conference, originally scheduled for this week, has been postponed until early next year because of "an unexpected volume of interest from companies joining and coming up with ideas we didn't think of," a Lotus spokesman said. He hastened to add, however, that Lotus is resisting potential red-tape development slowdowns by "limiting the number of cooks so that the broth gets finished" very early next year.

Since it is unclear what transport systems the OMI (or MAPI) "broth" will support and who will support it, users implementing X.400 backbones would probably be wise to go with X-API-supported applications, one analyst advised.

However, the powwow between the LAN powers last week is still an important industry step, since until now, Novell has been "lukewarm" about OMI, Lotus acknowledged, and Microsoft has been silent.

The reason a common interface from these vendors is desirable is that at least in the short term, users in this country are expected to retain their disparate, proprietary E-mail transport systems for communicating between nodes on a given LAN and use X.400 primarily between E-mail systems.

A company's new class of mail-enabled applications might require separate hooks and gateways in disparate corporate sites, depending on which E-mail transport each LAN uses, if the availability of a standard interface doesn't kick in before the onslaught of the mail-enabled applications.

Over the long term in the U.S. and even in the short term in Europe, X.400 is likely to catch on in the LAN. Microsoft's Windows New Technology is based on X.400, and OSI developer Retix said it has created an X.400 Netware Loadable Module in an MHS format that will be announced next year when Novell unveils a new version of Netware 386.

In addition, LAN-based packages are expected to be enhanced with features that create more overhead and complexity. X.400 has been criticized as difficult to develop to because of its complexity; when the proprietary E-mail systems rival X.400 on that score, users are likely to go with the worldwide standard.

Wexler is a *Computerworld* senior editor.

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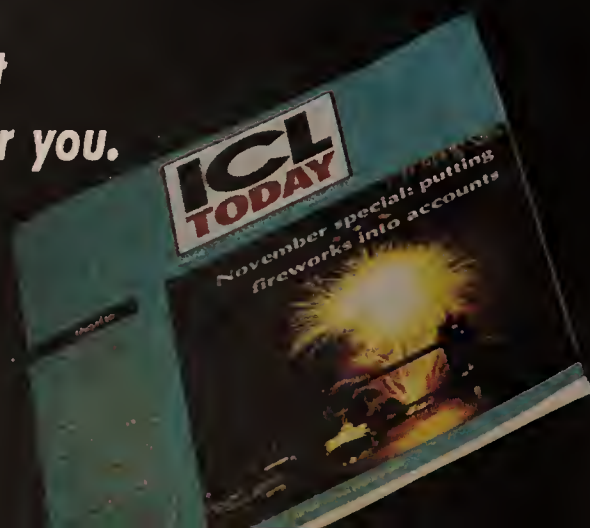
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Motorola plans more powerful wireless modem for 1992

BY ELLIS BOOKER
CW STAFF

SCHAUMBURG, Ill. — Earlier this month, executives at Motorola, Inc. were giving sneak previews of their second-generation radio frequency modem, a more powerful but far smaller version of the unit the company announced this past January and began shipping in May.

The new modem — called the RPM405I — is being announced this week and will be available to computer vendors early next year. It will work with Advanced Radio Data Information Ser-

vices, a national wireless network jointly owned by Motorola and IBM.

Like mobile computing, wireless technologies for laptops, palmtops and devices not yet off the drawing board are largely a game of balancing weight, size, power and price.

The RPM405I succeeds in improving on all four parameters, according to the vendor. Although the 3W data transmitter/receiver is the same size — about 2½ sq in. — Motorola was able to shrink the size of the associated electronics. The result was a 73% reduction in the vol-

ume of the unit and a 40% increase in power.

The price of the modem to OEM customers (for fewer than 1,000 units) will be \$500. The modem will add approximately \$1,500 to the total cost of the portable computer, predicted Paul Hill, an OEM sales manager at Motorola's Land Mobile Products Sector in Vancouver, British Columbia.

Extrapolating on the growth of the cellular marketplace, Hill said he thinks 10% to 15% of all portable computers will be "wireless-enabled" in the next two or three years.

Motorola believes the size of the wireless market in the U.S. will grow from about 100,000 users today to 5 million by 1996.

A potentially significant place for growth will be in pen-based computers, Hill and others said. "Pen-based systems and [wireless] networks are both related to real-time requirements," Hill said.

Hill noted the available speeds on wireless packet-switched networks do not lend themselves to large file transfers but are ideal for short messages, electronic mail and the updating of databases at the host or in the portable computer. The Ardis network, for instance, runs at 4.8K bit/sec. but is technically capable of 19.2K bit/sec. speeds.

NSF to solicit bidders

CONTINUED FROM PAGE 49

of up to 18 months, Wolff said.

The NSFnet backbone links about two dozen regional networks that in turn connect hundreds of local-area networks at campuses and government and industrial laboratories.

The backbone will get \$10 million this fiscal year from the NSF, \$1 million from the state of Michigan and considerable amounts of hardware, software and technical assistance from IBM and MCI Communications Corp.

Day-to-day network management is subcontracted by Merit, a consortium of Michigan universities, to Advanced Network & Service, Inc. (ANS), a partnership of Merit, MCI and IBM formed 15 months ago.

Five-year plan

Aided by a bill passed last month by Congress, the NSFnet is to evolve over five years or so into a gigabit-plus-per-second network to be called the National Research and Education Network (NREN).

Congress has said the government is to withdraw direct funding for the network and turn it over to commercial providers. At that point, NSF funding would take the form of grants to the regional networks, universities or network users to be used to offset the commercial costs of using the backbone.

That will happen, but not as fast as had originally been planned, Wolff said. "We hoped

it would happen now, but the consensus of the community was that the regional networks are not prepared just yet to undertake independent solicitations . . . for backbone services. Commercial providers . . . would love to see our money given to the regionals so that they could buy their backbone services, but the regionals and the user communi-

I DOUBT [USERS] will see any difference in cost."

STEPHEN WOLFF
NSF

Tiny transmitters

The air overhead is crowded, according to makers of radio-frequency and cellular modems and the companies providing the wireless networks that use them.

Motorola and others have pushed hard to get the Federal Communications Commission to reallocate existing spectrum for wireless data networking.

In October, Motorola advocated that the FCC free up some 317 MHz of spectrum by the year 2000.

"Of that total, we estimate that private services need 150 MHz of new spectrum for new, enhanced, on-site, local- and wide-area private and shared private systems," said John E. Major, a senior vice president at Motorola.

Motorola noted in October that Japan is making some 600 MHz of radio frequency spectrum available for advanced mobile communications systems.

ELLIS BOOKER

NEW PRODUCTS

Micro-to-host

Rabbit Software Corp. has announced a terminal-emulation adapter for portable computers.

The product, Cricket, allows laptop and notebook computers to function as 3270 distributed function terminals (DFT). Cricket attaches to the system's parallel port.

The adapter costs \$1,195, with DFT software included.
Rabbit Software
Great Valley
Corporate Center
7 Great Valley Pkwy. East
Malvern, Pa. 19355
(215) 647-0440

Local-area networking hardware

Vortex Systems, Inc. has announced Vinesmirror.

Vinesmirror offers high-performance hardware-based disk mirroring for Banyan Systems, Inc. Vines users.

The product includes a intelligent disk controller, 4M bytes of cache memory and four discrete

small computer systems interface channels.

The product costs \$8,995.

Vortex Systems
800 Vinial Street
Pittsburgh, Pa. 15212
(412) 322-7820

Local-area networking software

Brixton Systems, Inc. has announced two products for connecting Sun Microsystems, Inc. workstations and IBM Systems Network Architecture (SNA) products over a Token Ring network.

Brxtr/Ip provides data sharing capability for remote Sun Sparcstations using Transmission Control Protocol/Internet Protocol. It is transparent to the user and uses the Subnetwork Access Protocol for connection to other devices on the network.

Brxtr/SNA connects Sparcstations to SNA networks, allowing Sun users to access IBM mainframe hosts.

The products are bundled together with a Token Ring card

for \$995.

Brixton Systems
Suite 4200
185 Alewife Brook Pkwy.
Cambridge, Mass. 02138
(617) 497-2938

Sunpics, a Sun Microsystems, Inc. business, has announced Newsprint 2.0.

Newsprint allows users of networked microcomputers, including personal computers, Apple Computer, Inc. Macintoshes and workstations, to print files with any printer on the network. It also enhances printer performance.

The new version allows PC and Macintosh applications to interact.

The software is priced at \$695. Upgrades are available for \$149.

Sunpics
2550 Garcia Ave.
Mountain View, Calif.
94043
(415) 960-1300

Cheyenne Software, Inc. has announced Arcserve 4.0, an upgrade of its server-based backup and restore software for Novell, Inc. networks.

Arcserve 4.0 offers new fea-

tures including automated tape-rotation capability and backup speeds of over 20M byte/min., the company reported. The product supports Novell's Storage Management Services specification.

A five-user license is priced at \$295 under Netware 286. Pricing under Netware 386 starts at \$1,195 for a 10- to 20-user license.

Cheyenne Software
55 Bryant Ave.
Roslyn, N.Y. 11576
(516) 484-5110

Front ends, multiplexers

UDS Motorola has announced a multirate Data Service Unit/Channel Service Unit with an internal V.32 modem.

The DDS/V.32 offers full-duplex synchronous communications at rates ranging from 1.2K bit/sec. to 56K bit/sec. and asynchronous rates from 1.2K bit/sec. to 19.2K bit/sec. via Digital Dataphone Service network.

The DDS/V.32 costs \$1,895.
UDS Motorola
5000 Bradford Drive
Huntsville, Ala. 35805
(205) 430-8000

Electronic mail

Wordperfect Corp. has announced the Wordperfect Office Memo Gateway for information exchange between local-area networks running Wordperfect Office and Verimotion, Inc.'s Memo.

The product includes message forwarding and tracking, reply requests and security features. The Gateway (\$4,995) requires a dedicated personal computer.

Wordperfect
1555 N. Technology Way
Orem, Utah 84057
(801) 225-5000

Enable Software, Inc. has announced the Higgins Dispatch module for its electronic mail software package.

Higgins Dispatch (\$995) collects data from other applications and automatically sends out E-mail messages containing the information.

Enable Software
Higgins Group
Suite 101
1150 Marina Village Pkwy.
Alameda, Calif. 94501
(510) 865-9805

EXECUTIVE TRACK



Charles Biebighauser has been named vice president of operations at the **International Reservations and Information Consortium (Intrico)** in Carrollton, Texas.

Biebighauser is in charge of the Confirm reservation system project, scheduled for launch in mid-1992. He will supervise more than 400 members of the development team from the four Intrico partners: Hilton Hotels Corp., Marriott Corp., Budget Rent-A-Car Corp. and American Airlines' AMR Information Services unit.

Biebighauser was most recently president and chief operating officer at Spectrum Interactive, a division of Applied Learning International. Before that, he was a group vice president at Ford Motor Co. and a division vice president at Electronic Data Systems Corp.

Derek J. Reynolds was named senior vice president of technology at **Telecredit, Inc.**, a check authorization and credit-card processing subsidiary of Equifax, Inc. He will be based in Tampa, Fla.

Reynolds was previously vice president of telecommunications at Atlanta-based Equifax. He joined the firm in 1982 as a telecommunications specialist at its credit information services division and became assistant vice president of data processing in 1986.

He holds a bachelor's degree from the University of Wisconsin and a master's degree from the University of Southern California.

Carla D. Thomey has been named data processing manager at **Meeting Planners International**, a Dallas-based association of meeting professionals, with more than 10,000 members in 32 countries.

Thomey has been employed by Hewlett-Packard Co. for the past nine years as a systems representative and office automation specialist, and she worked on the Meeting Planners International account.

Hot off the press: Customer service

Publications enrich subscriber databases for quicker, more effective problem solving

INDUSTRY CLOSE-UP

IS in Print Media

BY EMILY LEINFUSS
SPECIAL TO CW

Nearly everyone who reads magazines and newspapers has at one time or another failed to receive a paid-for publication, gotten triple billed for it or received a cancellation notice after sending in a payment. These are irksome occurrences at best; at worst, they give readers a reason to cancel a subscription.

In this age of flat circulation and heated competition from broadcast media, such as cable television, for subscribers' time and money, magazines and newspapers can ill afford to let even one subscriber go. Daily newspaper circulation, for instance, has been slowly eroding since 1984, when it hit a high of more than 63 million readers. In 1990, that figure was down to approximately 62 million, according to *Editor & Publisher*, an industry publication.

To counteract this trend, print media companies, like other organizations for which client satisfaction has an impact on the bottom line, are focusing their technology dollars on improving customer service and thereby retaining subscribers. In a recent survey, consulting firm CSC Index, Inc. found that more than 50% of media companies were targeting customer service and

the related function of order processing as their top area of information technology spending.

"Companies are finding that it is a lot less expensive to keep current customers than to go out and bring new customers in," says Linda Peters, vice president at CSC Index's San Francisco office.

Specifically, publications are centralizing and consolidating their customer service and ordering systems and expanding their customer databases to include more information about their readers. The firms are using the information to offer one-stop access for all customer service requests and problems. Furthermore,

new uses for 900 numbers and faxes are providing ways to add value to the products readers receive (see story page 58).

Pleasantville, N.Y.-based Reader's Digest Association, for one, says its data center consolidation and unified customer database lay the groundwork for delivering quality customer service to its more than 28 million readers and is instrumental in giving the magazine higher than average renewal rates. The magazine's renewal rate has risen from 64% seven years ago to 70% today. The national average is about 60%, according to the Magazine Publisher's

Continued on page 58



Philip Anderson

IS slowly awakening to data privacy issues

BY CLINTON WILDER
CW STAFF

The calls are getting louder for information systems professionals to take responsibility for data privacy issues. IS may be heeding them but not with wholesale enthusiasm.

"I'm getting a sense that there may be an awakening in the MIS community — a slow one," said H. Jeff Smith, assistant professor at the Georgetown University School of Business Administration in Washington, D.C.

Smith surveyed 50 IS professionals last year [CW, June 3] and found they had very little interest in taking responsibility for the way data is used. But recent national media attention on credit reporting firms such as TRW, Inc. and Equifax, Inc. have spurred a change.

IS professionals "are starting to think that if it ever hits the fan, it's the IS people that will be on the line," Smith said. "That is not a comment

that I heard a year ago."

Several recent developments have thrust consumer data privacy into the forefront, including the passage of the Fair Credit Reporting Act and news reports that the entire population of Norwich, Vt., received poor credit ratings from TRW because of faulty data collection.

The Federal Trade Commission has revealed that credit reports are currently the No. 1 source of consumer complaints in the U.S.

The ethical path has led to the door of the IS shop. If IS has truly evolved from the processor of data to the steward of strategic information, many now argue that IS is the appropriate function to serve as privacy watchdog.

Providing information to the business "is like handing someone a loaded gun," said Kavin Moody, a former IS executive at Gillette Co. and Bank of Boston who is now senior vice president at Technology Investment Strategies Corp. in Framingham, Mass. "IS

can no longer just hand off the data and turn its head." Moody recently published a report titled "The IS Organization's Responsibilities for Personal Information."

Privacy checklist

Moody urges that every shop include a checklist in its systems development methodology to ensure the application's data complies with changing privacy laws and the company's ethical standards.

The issue is particularly germane at companies where sales efforts use database marketing — often working closely with IS departments — to make customized pitches to individual consumers.

Moody said he believes that those who keep their heads in the sand will only be forced to deal with the privacy issue in the future, when the company runs into a problem like TRW did, or when legislators or courts impose regulations. "If you say you don't have time to deal with these issues now, you will pay later," he said.

Hot off the press: Customer service

CONTINUED FROM PAGE 57

Association in New York.

"Customer service includes everything from working with customers to helping define new products all the way through [providing] classical customer services like order processing, fulfillment and billing," says Ken Nelson, vice president of MIS at Reader's Digest.

The company's database resides on an IBM 3090 located in the main data center in Pleasantville; it is in the process of being upgraded to an IBM Enterprise System/9000 to allow the company to have quicker access to information and to hold more information about its expanding products and services. Developing the database and upgrade is reportedly costing Reader's Digest about \$20 million.

The database holds a total composite picture of every transaction each customer has ever made with the company, including magazine, book and music orders, responses to promotions, shipping and re-

turn records and all payments. This customer profile is pulled from each of the various departments responsible for the products, promotions and payments, and is presented on one screen for customer service representatives. In this way, no matter what the nature of the problem, the customer service representative can handle it on the spot.

For example, when a customer calls Reader's Digest with a payment problem — he received an overdue notice even though he already sent a check — the database calls up information from accounting that the representative can use to ver-

ify whether a payment was received.

"No customer service representative ever has to say, 'I'll get back to you,' because all records are on-screen," Nelson says.

Furthermore, during the past few years, the magazine company has encouraged its customers to use a toll-free 800 telephone number and now handles almost half its customer service problems via telephone.

Nelson says company surveys show that 98% of Reader's Digest's telephone customer service situations are satisfactorily resolved in less than three minutes, a favorable contrast to the two-day turnaround needed to resolve a problem via mail. Nelson says quick, efficient solutions are the reason 90% of Reader's Di-

gest customers in a recent survey said they are happy with the way the customer service function worked.

The national newspaper *USA Today* manages customer service through a distributed database strategy and centralization of customer service function.

USA Today has a twofold customer service philosophy. The company wants it to be easy for people to contact it and to get their orders, inquiries and complaints resolved satisfactorily, and it wants to be able to offer the appearance of local service nationwide, according to John Palmisano, vice president of information systems at the Arlington, Va.-based media company.

To achieve this, in 1985 the company began implementing a system that in-

Dial-up readers

Instant gratification for readers is the main objective when newspapers and magazines implement 800 or 900 telephone numbers and fax publishing services.

"The idea is to provide more service and instant service," says Alan Phillips, president of Instant Information, Inc. in Boston, a service bureau for integrated voice/fax offerings.

Some publications taking advantage of the voice/fax combo are *New England Journal of Medicine (NEJM)*, *Standard & Poors*, *Lawyer's Weekly*, *Cruising World* and *The Portable Office*.

For example, the *NEJM* provides instant fax retrieval via push-button phone for all previously published articles, *Lawyer's Weekly* offers up to six months of previous cases, and *Cruising World* links boat buyers and sellers.

Cruising World pairs 1,800 readers with more than 2,000 boat owners each month, says Elise Black, the liaison between the magazine and Instant Information. For \$3.95 per inquiry (billed on the client's phone), readers can dial a 900 number, give a boat code number listed in the magazine, punch in his fax number and hang up. Within 30 seconds, the information on the boat is faxed back to the potential boat buyer by Instant Information, which taps the magazine's database of boat owners and maintains a voice/fax response system that processes telephone requests. Mail responses are also available.

While 900 numbers and fax technology are becoming popular for this kind of customer service, observers say the lack of regulations and standards for information may stifle growth.

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cludes a national data center in Silver Spring, Md., and four regional data centers in Washington, D.C., Atlanta, Chicago and Phoenix. The national center uses two IBM 4381 mainframes to handle corporate consolidation. The regional data centers use a network of IBM Application System/400 and System/38 machines to support the processing needs of the newspaper's 28 sales and distribution offices and 33 printing facilities. There is a total of 13 IBM computers connected via communications links so that the National Customer Service Center can handle all customer service centrally.

For example, a customer in Phoenix can call one of the 65 customer service representatives at the national data center in Silver Spring to complain that he did

not receive a paper that morning. By entering the customer's ZIP code, a representative can find out from the system if there is a known problem at one of the printing plants, poor weather conditions or even highway construction that may delay distribution to the client's area.

When redelivery is necessary, the customer's account information can be retrieved within three seconds from a local database stored on one of the regional data center machines. The action to be taken is recorded, with the machine sending the transaction to the appropriate distribution area, which acts on the request.

Prior to this setup, all of *USA Today's* customers were directed to call their local distribution office for service. There were more than 40 different numbers to

call, depending on location. "The expertise on the part of the service staff varied from location to location, and we could not get a good handle on where problems occurred," Palmisano says.

The new system not only handles problems faster, it also acts on new subscriptions faster. It used to take 10 days on average to start an order; now it takes only three.

The newspaper thinks its customer service strategy is paying off. Its circulation, 1.8 million, is increasing at about 5% a year at a time when circulation is just treading water at most newspapers. Palmisano attributes much of that increase to technology-enabled customer service.

Leinfuss is a free-lance writer in Sarasota, Fla.

CALENDAR

DEC. 29-JAN. 4

ADS Technical Symposium. Tucson, Ariz., Jan. 4-10 — Contact: Rob E. Zenuk, Tucson Medical Center, Tucson, Ariz. (602) 327-5461.

JAN. 12-18

Pacific Telecommunications Conference. Honolulu, Jan. 12-15 — Contact: Pacific Telecommunications Council, Honolulu, Hawaii (808) 941-3789.

Network Management Seminar. San Francisco, Jan. 13 — Contact: AG Group, Walnut Creek, Calif. (510) 937-2479.

IS Forum: Technology for the 90s. San Jose, Calif., Jan. 14 — Contact: Jay Kamlani, Jaymark Applied Systems, Inc., Fremont, Calif. (510) 651-6030.

Telecom Industry Productivity and Quality. Washington D.C., Jan. 14-15 — Contact: Kathy Lentz, Telecommunications Reports, Washington, D.C. (202) 842-3022.

The Software Support Professionals Association Winter 1992 Executive Forum. San Diego, Jan. 17-18 — Contact: Dorcy Bowman, Software Support Professionals Association, San Diego, Calif. (619) 674-4864.

JAN. 19-25

Uniforum '92. San Francisco, Jan. 22-24 — Contact: Bob Linke, Professional Exposition Management Co., Carol Stream, Ill. (708) 260-9700.

Nextworld Expo '92. San Francisco, Jan. 22-24 — Contact: Jeannine Barnard, World Expo Corp., Framingham, Mass. (508) 879-6700.

JAN. 26-FEB. 1

The AS/400 Help Systems Operations Automation User Conference. Orlando, Fla., Jan. 27-30 — Contact: Help Systems, Inc., Minnetonka, Minn. (612) 933-0609.

Improving Productivity in Systems Development. Phoenix, Jan. 27-31 — Contact: Applied Computer Research, Inc., Phoenix, Ariz. (602) 995-5929.

Comnet '92. Washington, D.C., Jan. 27-31 — Contact: Rachel Winett, World Expo Corp., Framingham, Mass. (508) 879-6700.

Infotext. Las Vegas, Jan. 28-30 — Contact: Infotext Publishing, Inc., Capistrano Beach, Calif. (714) 493-2434.

8th Annual Computer Graphics Show. New York, Jan. 28-30 — Contact: David J. Small, MIJO, Inc., Silver Spring, Md. (301) 587-4545.

FEB. 2-8

Information Management Conference. New York, Feb. 4-5 — Contact: The Conference Board Registrar, New York, N.Y. (212) 339-0290.

FEB. 9-15

Computer Graphics '92. Walt Disney World, Orlando, Fla., Feb. 10-12 — Contact: Sheila A. McDonald, Frost & Sullivan, Inc., New York, N.Y. (212) 233-1080.

Network '92. Boston, Feb. 11-13 — Contact: Annie Z. Scully, Bruno Blenheim Associates, Englewood Cliffs, N.J. (201) 596-8542.

Dexpo. Calgary, Alberta, Feb. 11-13 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.



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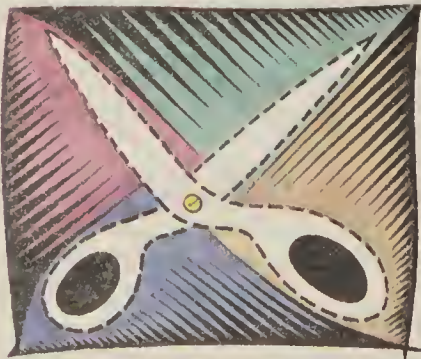
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Summaries from leading scientific and management journals

"Appropriate Manufacturing Technology: A Strategic Approach"

By Robert M. Grant, R. Krishnan, Abraham B. Shani and Ron Baer

Sloan Management Review
Fall 1991

■ Future ideal: Robots controlling computers on the manufacturing floor, while picture-perfect products roll off the assembly line.

Present reality: Companies seeking the future today may be overshooting their potential.

The authors followed four companies through the evolution of their manufac-

turing systems and investments in new technologies. All of the companies — Northern Telecom, Inc.'s Santa Clara, Calif., plant, Next, Inc., New United Motor Manufacturing, Inc. and Harley-Davidson Motor Co. — have made manufacturing excellence a high priority in their competitive strategies.

The companies also provide a valuable reality check for companies rushing the future. For instance, while fully automated computer-integrated manufacturing (CIM) holds great promise, it is also very expensive. Investments in CIM can often exceed \$50 million, and the benefits are by no means guaranteed.

Additionally, interesting management techniques, such as just-in-time inventory approaches — whereby manu-

facturers place orders to suppliers as products are about to be assembled, cutting down on warehousing costs — may work for some companies but are impractical for others.

Essentially, each company's manufacturing approach needs to be tailored to the company and its markets. There are many non-factory-floor factors that can have an impact on the manufacturing process, including a stagnant economy and cultural differences. Moving to the factory of the future in practical stages is the most successful approach to the promise of new technology. — Alan J. Ryan

"The Future Role of the Systems Analyst as a Change Agent"

By Kenneth T. Fougere

Journal of Systems Management
November 1991

■ Systems analysts are increasingly assuming the role of change agents, or people who influence decisions in technical innovation. To be effective, change agents must possess extensive technical and systems evaluation knowledge.

Successful change agents also wear many hats and must be able to do the following:

- Point out a need for change to the end user by suggesting alternatives to current problems and convincing the end user that the problems can be solved.
- View problems from the perspective of the end user and motivate users to become involved in problem resolution.
- Put motivation into action by working with information systems leaders to spur peer support networks.
- Shift the end user's position from one of reliance on IS to one of self-reliance.

A change agent's success in getting his clients to accept change will be spurred by greater interaction with end users. Adhering to the success factors noted will significantly increase a change agent's ability to determine true user requirements. — Kelly E. Dwyer



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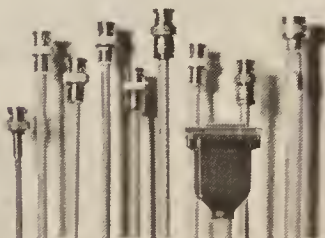
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"Georgia Police Department Battles Crime with Optical Disk Records Management System"

IMC Journal
November/December 1991

■ When the Atlanta suburb of Smyrna, Ga., (population: 35,000) swells with commuter traffic, the number of people in the city can climb as high as 80,000. The local police say that puts a strain on the small city's police resources: More traffic accidents and crime translates into more paperwork, more files and more file-retrieval problems.

The increased volume had become a storage nightmare. The space that once held five years' worth of files was barely able to hold six months' worth.

The Smyrna police department, like any business facing a similar paper dilemma, started looking to alternatives, including hiring more workers. However, the department settled on an optical disc records management system from Minolta Corp.'s Document Imaging Systems Division.

The system allows for the secure storage of files and fingerprints and the quick retrieval of files from a centralized location. — Alan J. Ryan

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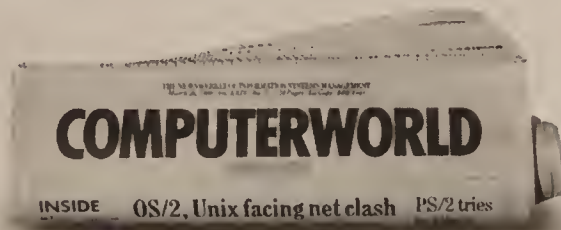
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1992 Computerworld Editorial Calendar (January-June)

Issue Date	Ad Closings Color* B/W		Editorial Feature	Show Distribution	Ad Readership Issue	Response Card Decks
Jan. 6	Dec. 20	Dec. 27	Executive Report: To Be Announced			
Jan. 13	Dec. 27	Jan. 3	Product Spotlight: Windows Applications			Mails: Jan. 15 Space Close: Dec. 6 Mat'l Close: Dec. 9
Jan. 20	Jan. 3	Jan. 10	Executive Report: To Be Announced Industry Closeup: Automotive Industry			
Jan. 27	Jan. 10	Jan. 17	Product Spotlight/Buyers' Scorecard: LAN Management	Communication Networks Jan. 28-30 Washington, D.C. Windows OS/2 Jan. 28-30, San Jose, CA	Harvey Study	
Feb. 3	Jan. 17	Jan. 24	Executive Report: To Be Announced			
Feb. 10	Jan. 24	Jan. 31	Product Spotlight: E-Mail	Networkworld Feb. 11-13, Boston	Starch Study	Mails: Feb. 12 Space Close: Jan. 3 Mat'l Close: Jan. 6
Feb. 17	Jan. 31	Feb. 7	Executive Report: To Be Announced			
Feb. 24	Feb. 7	Feb. 14	Product Spotlight/Buyers' Scorecard: Accounting Systems			
Mar. 2	Feb. 14	Feb. 21	Executive Report: To Be Announced			
Mar. 9	Feb. 21	Feb. 28	Product Spotlight: Client/Server Application Development		Harvey Study	Mails: Mar. 11 Space Close: Jan. 31 Mat'l Close: Feb. 3
Mar. 16	Feb. 28	Mar. 6	Integration Strategies: Pulling Macs Into the Enterprise Network Industry Closeup: Aerospace			
Mar. 23	Mar. 6	Mar. 13	Product Spotlight/Buyers' Scorecard: RISC Desktop Machines and Servers	DB Expo Mar. 23-26 San Francisco	Starch Study	
Mar. 30	Mar. 13	Mar. 20	Executive Report: To Be Announced			
Apr. 6	Mar. 20	Mar. 27	Product Spotlight/Buyers' Scorecard: PC Software—Fresh Application Categories and New Twists on Old Ones	Comdex Spring '92 and Windows World Apr. 6-9, Chicago		
Apr. 13	Mar. 27	Apr. 3	Executive Report: To Be Announced			Mails: Apr. 15 Space Close: Apr. 3 Mat'l Close: Apr. 6
Apr. 20	Apr. 3	Apr. 10	Product Spotlight: Printers Best Suited for a LAN Environment			
Apr. 27	Apr. 10	Apr. 17	Executive Report: To Be Announced		Harvey Study	
May 4	Apr. 17	Apr. 24	Product Spotlight: Midrange Systems That Run Enterprises			
May 11	Apr. 24	May 1	Integration Strategies: Creating an "Open" Company Industry Closeup: Personal Care Industry		Starch Study	Mails: May 13 Space Close: Apr. 3 Mat'l Close: Apr. 6
May 18	May 1	May 8	Product Spotlight/Buyers' Scorecard: Routers	Interop East May 18-22 Washington, D.C.		
May 25	May 8	May 15	Executive Report: To Be Announced			
June 1	May 15	May 22	Product Spotlight: What the Well-Equipped Help Desk is Using			
June 8	May 22	May 29	Product Spotlight: MRP II			Mails: June 10 Space Close: May 1 Mat'l Close: May 4
June 15	May 29	June 5	Special Edition: Annual <i>Premier 100</i> Magazine (Ad Close: May 1) Executive Report: To Be Announced			
June 22	June 5	June 12	SPECIAL SUPPLEMENT: <i>Computerworld's</i> 25th Anniversary Product Spotlight/Buyers' Scorecard: Portable Computing (laptops, notebooks, pen-based and wireless technologies)	PC Expo June 23-25 New York City AIIM June 22-25 Anaheim	Harvey Study	
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INTEGRATION STRATEGIES

Client/server business is booming

BY ALICE LAPLANTE
SPECIAL TO CW

Demand for commercial systems integrators in the client/server arena is growing rapidly, as more corporations look for help downsizing mainframe-based applications into distributed environments.

Over the next five years, according to G2 Research, Inc., such services are expected to grow a whopping

34% annually, even though the rest of the computer industry is in the doldrums.

James Perkins, a consultant at the Mountain View, Calif., firm, says growth is being fueled by economic pressures to downsize and the availability of new client/server technology. The firm predicts revenue from client/server integration will nearly quadruple — from \$2.2 billion in 1990 to \$8.4 billion by 1995.

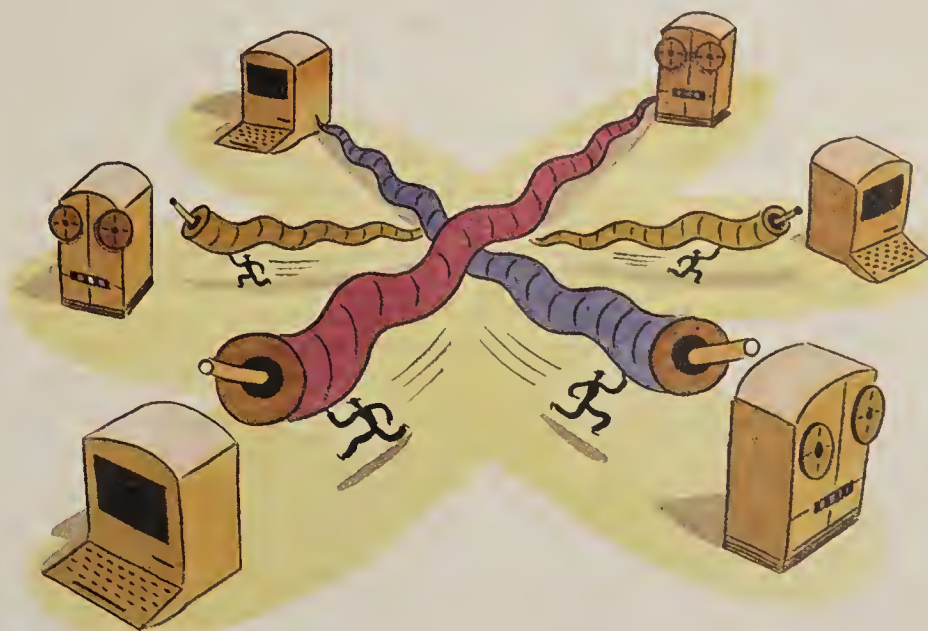
"We have virtually no systems integration project currently under proposal that doesn't contain some aspect of client/server architecture," says Glover Ferguson, director of technology strategies and programs at Andersen Consulting in Chicago.

By definition, client/server involves a "mix-and-match" approach to systems design, using products and

technologies from a wide range of vendors. Companies can find it daunting to manage all the vendor relationships and often look for outside help. Users and consultants also cite several other reasons for using an outside integrator (see story page 69).

Typical is a project under way at Nicholas-Applegate Capital Management in San Diego. The money management firm wanted to give personal computer users access to mainframe data using a distributed client/server architecture and Microsoft Corp.'s Windows.

The company's eventual goal was to gather client portfolio and performance accounting records, currently stored on its mainframe, PCs and hard copy, into a single database to improve flow and access, explains Joan Sundstrom, a senior vice presi-



Michael Klein

dent at Nicholas-Applegate.

The firm hired Marathon Systems, a San Francisco-based integrator specializing in client/server applications, to help design and build the new architecture.

The reasons for turning to an outside firm were speed and economy, according to Sundstrom: Nicholas-Applegate wanted to get the new system running as soon as possible but lacked in-house technical expertise on the relatively young technology.

Also, given the project's short du-

ration, it didn't make sense to hire additional, permanent full-time employees or to train existing ones, she adds.

"We simply wouldn't need that expertise or those personnel resources after the project was completed," Sundstrom says.

Having a single source for problem solving can also be an attractive selling point for companies.

For example, Forces Command, a department of the U.S. Army based in Atlanta, contracted with HFSI (for-

Continued on page 69

Network to score perfect 10 at Olympic Games

..... INTEGRATING CLIENT/SERVER

Barcelona
Olympic Organizing
Committee

BY ALAN RADDING
SPECIAL TO CW

By the time the Olympic torch is lit July 25 in Barcelona, Spain, the massive client/server-based scoring system will have been put through the testing paces at more than 100 events.

The Results Information System, developed by Electronic Data Systems Corp. in Dallas, will link more than 9,000 computers, bringing news of the international competition almost instantly to 3.5 million live spectators and more than 3 billion people in more than 100 countries.

Now being tested, the system will include two IBM Enterprise System/9000 computers, one Application System/400, 3,800 Personal System/2s and OS/2 software — all

donated by IBM, a joint partner of the Olympic Games — as well as computer equipment donated by the Spanish national telephone company and Apple Computer, Inc.

"The real challenge was thousands of different outputs and linking many systems: OS/2, DB2, [IBM's Advanced Program-to-Program Communications], mainframes, minicomputers and PCs," says Juan Bennassar, EDS' technical manager in Barcelona.

After studying the computerized results systems at the previous four Summer Olympics, which had experienced inaccurate results, the Barcelona Olympic Organizing Committee wanted to do better.

"We want a single integrated system where every sports venue operates independently but where only one system produces results for everyone," explains Josep Bertran, a committee member.

The organizing committee decided it wanted a fast, accurate, fault-tolerant system that could generate instant, real-time results. The system also had to be simple enough to be operated by trained volunteers.

The committee selected EDS for the \$28 million contract on the basis of its client/server proposal, exper-



B. Hazelton

A massive client/server system, linking more than 9,000 computers, will provide real-time scoring of sports such as men's volleyball

tise and reputation, Bertran says. EDS won the Summer Olympics contract in December 1989 and went to work immediately.

The initial EDS design comprised a classic client/server architecture consisting of PS/2s on a Token Ring local-area network at each event site

(sports venue) linked to a central DB2 database, which would serve as a giant server for clients at each location. LAN-based personal computers would collect scores or measurements and pass them to the remote central database, which would com-

Continued on page 66

Network to score perfect 10 at Summer Olympic games

CONTINUED FROM PAGE 65

pile the actual results. This design did not work, however. "We could not meet the speed requirements for TV and the scoreboards," Bennassar says.

Instead, EDS modified the plan so that LANs, running applications EDS developed using Netbios primitives, would handle all input, processing and output of results.

A PC-based LAN at each event location will communicate through a subsystem with an IBM mainframe host. Each event site is equipped with a client/server and several PCs. One PC will handle host communication while other PCs on the LAN collect data from judges, timers or various measurement devices.

CLOSE-UP

Company: Barcelona Olympic Organizing Committee

Goal: Create a single, fast, integrated, fault-tolerant system to process data from various measuring devices and produce accurate, real-time results.

Strategy: Develop massive client/server-based Results Information System.

Payoff: Near instantaneous processing and transmission of more than 100 sports scores and results to various media servicing more than 3 billion people in more than 100 countries.

Systems integrator: Electronic Data Systems Corp.

Additional PCs will take scoring data and generate results for output to stadium scoreboards, worldwide radio and television networks and the press center (see chart). Small sites may have a few PCs on their LAN; large sites will have 40 or more PCs.

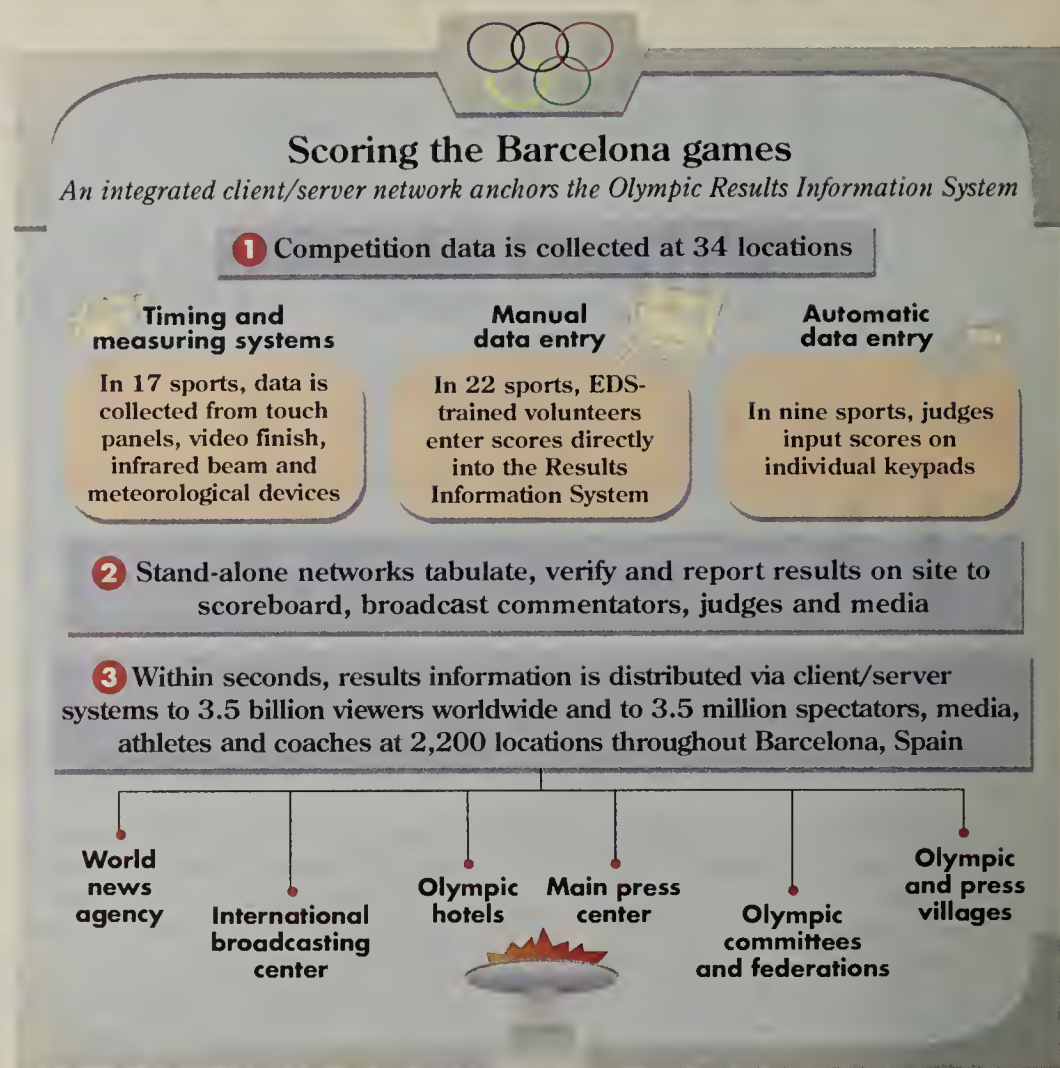
A communications subsystem links all the sports venues and nonsports locations, such as the international broadcasting center and the main press center, with the central host, an ES/9000 running CICS, MVS and DB2 that manages a common database for all the local systems.

Within the LAN, applications communicate using Netbios protocols. Communication from the LAN to the host, or other locations waiting for the results, uses IBM's Advanced Program-to-Program Communications protocol, including LU6.2 and related protocols.

The system supports 34 results work groups, with more than 20 groups operating simultaneously. These send results to eight end-user groups, such as the various media outlets, via approximately 8,000 report formats.

Building the results system required 500,000 work-hours of applications programming for calculating and validating the results for each event, EDS says. Bertran estimates the value of the system, much of which is donated, at \$24 million to \$40 million.

The overall scheme is classic client/server, but "we have gone even a step beyond client/server," Bennassar declares. This is done by putting the multiple clients and servers for each sport on their own LAN and integrating the LANs into a single client/server wide-area network.



CW Chart: Michael Siggins

Each node is capable of both independent and cooperative processing, and none has total control of others, he adds.

"This design has a lot of flexibility," Bennassar says. A level of fault tolerance is achieved through redundant backbone networks and an architecture that allows local independence and easy substitution of PCs on the LANs.

The local PCs on the LAN handle data integrity. EDS developed multiple levels of data validation to "ensure that all the output computers have the same results," Bennassar explains.

With only a single system generating all the results output for each event, the

organizing committee hopes to avoid the inconsistent results that plagued previous Olympics.

The system is also fast. "We can process the results and provide the output to TV or a scoreboard in 1.5 sec. or less from the time we get the information from the Seiko timer," Bennassar says.

The event's organizing committee sees the results system as more than just something for the games, which end Aug. 9. EDS will train more than 10,000 volunteers, ranging from technical students to technophobes, to operate the system. •

Radding is a free-lance writer in Newton, Mass.

Directory of client/server integrators

A partial listing of commercial systems integrators and consultants handling client/server integration.

VENDOR/INTEGRATORS:

Digital Equipment Corp., Maynard, Mass. (508) 493-5111

Hewlett-Packard Co., Palo Alto, Calif. (415) 857-1501

IBM, Armonk, N.Y. (914) 765-1900

Microsoft Education and Consulting Services, Redmond, Wash. (206) 882-8080

Sun Microsystems, Inc., Mountain View, Calif. (415) 960-1300

Unisys Corp., Blue Bell, Pa. (215) 986-4011

SYSTEMS INTEGRATORS/CONSULTANTS:

AGS Information Services, Inc., Mountainside, N.J. (908) 654-4321

Andersen Consulting, Chicago, Ill.

(312) 580-0069

BFA Sales, Inc., Albuquerque, N.M. (505) 828-9100

Booz Allen & Hamilton, Inc., New York, N.Y. (212) 697-1900

Business Systems Group, Inc., Houston, Texas (713) 965-9000

Cap Gemini America, New York, N.Y. (212) 944-6565

Compuserve Systems Integration Group, Columbus, Ohio (614) 457-8600

Computer Sciences Corp., El Segundo, Calif. (213) 615-0311

Control Data Corp., Bloomington, Minn. (612) 853-8100

Data Aids, Houston, Texas (713) 956-7200

ECCS, Inc., Tinton Falls, N.J. (908) 747-6995

Electronic Data Systems Corp., Dallas, Texas (214) 604-6000

Ernst & Young, New York, N.Y. (212) 773-3000

Evernet Systems, Inc., Los Angeles, Calif. (213) 649-5900

G2 Research, Inc., Mountain View, Calif. (415) 964-2400

Gartner Group, Inc., Stamford, Conn. (203) 964-0096

HFSI, McLean, Va. (703) 827-3000

Integris (integration unit of Bull HN Information Systems, Inc.), Billerica, Mass. (508) 294-7900

International Data Corp., Framingham, Mass. (508) 872-8200

International Micronet, San Francisco, Calif. (415) 399-1111

A. T. Kearney, Inc., Chicago, Ill. (312) 648-0111

KPMG Peat Marwick, New York, N.Y. (212) 758-9700

Lante Corp., Chicago, Ill. (312) 236-5100

Litton Computer Services, Woodland Hills, Calif. (818) 715-5200

Logica Data Architects, Inc., Waltham, Mass. (617) 890-7730

Nynex Worldwide Services Group, White Plains, N.Y. (914) 644-7800

Pacific Access Computers Corp., Rancho Cordova, Calif. (916) 635-9300

Perot Systems Corp., Herndon, Va. (703) 709-3000

Price Waterhouse, New York, N.Y. (212) 819-5000

Science Applications International Corp., San Diego, Calif. (619) 546-6000

SHL Systemhouse, Inc., Ottawa, Ontario (613) 236-1428

Southwest Network Services, Inc., Austin, Texas (512) 338-1565

Trellis Network Services, Inc., Princeton, N.J. (609) 987-0660

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Nimble newcomers are thriving in market brawl

BY ALICE LAPLANTE
SPECIAL TO CW

Score one for the little guys — in Round One, anyway.

As big commercial systems integrators retool their practices, small to midsize systems houses specializing in client/server and other newer networking and desktop technologies are holding their own, industry watchers say.

"The major systems integrators have built their practices over the last 20 years on the host environment," says Bonnie Digrius, program director at Gartner Group, Inc. in San Jose, Calif. "It will take a while for these firms to retrain their staffs for the newer environment."

In the long run, Digrius says, major systems integrators such as Andersen Consulting, IBM and Electronic Data Systems Corp. will be forces in client/server

consulting. "They will regain their dominance. But there is a window of opportunity now for smaller firms," she says.

And it's a substantial window. Although 80% of worldwide network integration services in 1990 were still captured by major vendors, a full 20% of revenue was earned by small to midsize firms, according to International Data Corp. in Framingham, Mass.

Size is a big issue for a company trying to implement an enterprisewide application, says James Perkins, a consultant at G2 Research, Inc. in Mountain View, Calif. "A smaller systems integrator might not have the scale to implement and support a global project," he says.

Even so, many companies are turning to smaller firms because of their experi-

ence with newer, emerging technologies.

For example, Nicholas-Applegate Capital Management in San Diego chose San Francisco-based Marathon Systems specifically because of its expertise in Microsoft Corp.'s Windows environment — the chosen corporate computing standard at Nicholas-Applegate (see story page 65).

Specialized knowledge

More and more, knowledge of a specific industry is also important — and it is mostly found in smaller, more highly focused integrators.

For instance, Princeton, N.J.-based Nesbit Systems, Inc., a small software developer and systems integration firm, specializes in client/server solutions for the broadcasting and video industry.

Product-specific experience can also be important. The hot action has not gone unnoticed by personal computer applications vendors.

"If you want to do something in a client/server networked environment, do you go to someone who has just started playing with it or to someone who has been doing it since it was first done?" asks David Connor, vice president of Lotus Consulting Services Group in Cambridge, Mass.

"We needed their experience and their talent," says Art Beckman, manager of information technology services at Pacific Gas & Electric Co. in San Francisco. "[Lotus Development Corp.'s] Notes is a newer technology and simply doesn't have as many consultants available as Cobol or C."

Although Microsoft doesn't bill its 18-month-old consulting services group as a systems integrator because it doesn't resell hardware or software, the group does build client/server applications, says Bob McDowell, vice president of education and consulting services at Microsoft.

"The larger systems integrators have always focused on more traditional architectures," McDowell says. The group works directly with clients or with traditional systems integrators to increase its skill and knowledge, he says.

However, financial incentives are not yet big enough for many large hardware vendors to rush into client/server, Perkins says. "IBM has a higher margin on the larger systems, so they'll continue to push them," he says.

Traditional hardware vendors are also interested but must contend with bias charges. "There are a lot of products that customers need that we just don't have, and so we recommend products from other vendors," says Ann Livermore, marketing manager at Hewlett-Packard Co.'s Professional Services Division in Mountain View. "The real key is whether an integrator can provide the software and services to pull it all together."

Dow-United Technologies opted to use an HP client/server manufacturing system around its HP 3000 systems and 130 HP Vectra PCs, and it seems pleased.

"We didn't have the expertise in the company to put together the network; we went to them," says Gary Smith, information systems manager at Dow-United.

Larger systems integrators are forming partnerships both with each other and with smaller, specialized firms to provide customers with appropriate services.

"No one has all the expertise to deliver client/server solutions on a widespread basis," says Wayne Toye, office services marketing manager at Digital Equipment Corp. in Maynard, Mass. •

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Demand booming for client/server integration business

CONTINUED FROM PAGE 65

merly Honeywell Federal Systems, Inc.) to be its systems integrator for a client/server project.

The system, which included Bull HN Information Systems, Inc. and Digital Equipment Corp. systems, connects desktop Apple Computer, Inc. Macintosh workstations to a national network serving 130 different sites. Called the WIS workstation, the desktop system assembled by HFSI incorporates hardware and software products from more than 45 vendors.

Having the integrator act as a single point of contact for user support eases the strain of using a more complex, sometimes less stable, technology, says Jose Rodriguez, a computer systems analyst at Forces Command.

"Because this operating system [Apple's AU/X] still has a lot of growing pains, HFSI has taken responsibility when things aren't working exactly right," Rodriguez says. "They're the ones we yell at when there's a problem — not Apple or Wordperfect."

Everyone's a player

Companies that decide to hire a client/server systems integrator have plenty of choices.

Everyone — from large systems integration houses such as Andersen Consulting and Electronic Data Systems Corp. to major hardware manufacturers such as IBM and DEC and a multitude of smaller firms specializing in local-area network design or a particular vertical industry — is jumping into this burgeoning market (see story page 68).

These vendors offer a wide range of services, from initial system design to development, procurement testing, project management and even support and maintenance of the system after the project has been completed.

Even PC-based software applications developers such as Microsoft and Lotus Development Corp. are getting into the act. While calling themselves consultants as opposed to systems integrators, these companies and others offer design and implementation services, too.

Which type of commercial integrator a company chooses depends largely on its specific needs and priorities. But the main

reason for turning to outside integrators is the reason you should also be extremely selective: Namely, the technology is so new that competent, experienced personnel can be very hard to find.

"It's very difficult to separate the wheat from the chaff when it comes to client/server integrators," warns George Newman, director of services research at International Data Corp. (IDC) in Framingham, Mass. He says that while many firms are eyeing this lucrative area, few have the expertise to back up their claims.

Paul Zorfiass, an IDC consultant, agrees, adding, "Client/server processing is in such an early stage that the tools themselves are only partially there, much less the people who know how to implement them."

As a result, one of the key criteria for choosing a vendor is proven, hands-on experience.

"More and more customers are saying, 'I don't want to be first,'" Zorfiass says. "Of prime concern is whether the integrator has done this before."

Who hires?

Another potential complication for companies seeking client/server integrators is this: Who hires the outside firm? Corporate information systems? The end-user department or division?

In 1990, about 28% of client/server integration projects were contracted at the department level, according to G2 Research. However, the firm says that number will swell to about 50%, or \$4.2 billion, by 1995.

The fact that more client/server applications originate in user departments — sometimes without the authority or knowledge of IS — raises some serious issues, consultants say. If such departmental client/server projects aren't managed from a centralized systems architectural point of view, experts warn, chaos can result.

"If corporations haven't done their homework with regard to an overall sys-

tems strategy, there can be a major breakdown between the company and the integrator," G2 Research's Perkins says.

Many organizations are acutely aware of the potential dangers and have acted accordingly.

Good planning key

General Foods USA, for example, was concerned about possible problems that could arise from the growth of departmental client/server projects. So the White Plains, N.Y. company formed a Local-Area Network Council to set enterprise-wide standards and policies for future application development efforts (see story page 72).

Pacific Gas & Electric Co. (PG&E) relies on new interpretations of a 10-year-old policy to stave off such problems. "We think it's absolutely necessary to have the vision to develop an overall infrastructure and strategy," says Art Beckman, manager of information technology services at the San Francisco utility.

Beckman says the policy, in place since 1981, has helped implement a variety of client/server projects in several departments without data flow, support or incompatibility problems. PG&E recently hired consultants from Lotus to help implement a client/server project based on Lotus' Notes.

Still, organizations with such controls are not the rule. Marathon Systems learned this lesson the hard way. The in-

tegrator was hired by the vice president of finance of a new, rapidly growing division of a Fortune 100 multinational company to design a set of prototype client/server applications.

Marathon Systems finished the prototype

only to find that the division had not consulted with central IS about key architectural issues.

"The division operated in a very isolated world, without a lot of discussions and interfaces with central MIS," says Doug Vaughan, vice president at Marathon Systems. Problems arose, he recalls, when it came time to download data from the corporate mainframe-based billing system onto departmental servers.

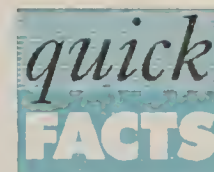
"There wasn't any strategic thinking in either camp on how to bring it all together," Vaughan says. "In hindsight, it is clearly better to work closely with MIS, even in a prototyping phase, to plan where you are going."

After the setup

The role of the integrator doesn't stop with systems design, however. Because client/server computing differs so much from classic glasshouse computing, it often requires a complete redesign of support and operations procedures.

"People are constantly underestimating the operations architecture requirements involved," Andersen Consulting's Ferguson says. For example, he asks, how do you bring out a new software release when you have multiple locations and multiple platforms?

The answer seems to be in staggered conversions. "A lot of times, releases aren't in sync," Ferguson notes. "In essence, you have rolling waves of conversions: first a wave for terminals, then a wave for workstations. Yet everything still needs to keep working."



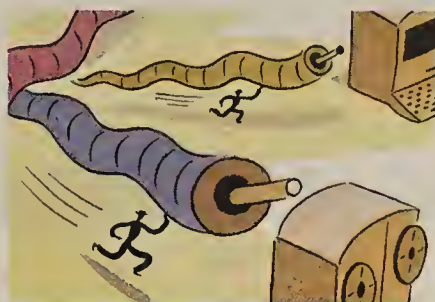
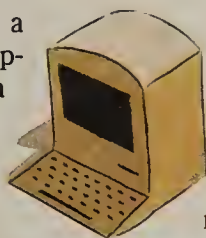
Worldwide revenue for systems integrators totaled \$19.4 million in 1990. By 1996,

annual growth rates of 20% will push market size to \$58.6 billion. The biggest boosters will be lack of in-house expertise, globalization and process re-engineering.

U.S. integrators had \$15.3 billion in revenue in 1990. Projected annual growth is 21% through 1996.

Commercial business accounts for 44% of integration dollars spent in the U.S., eclipsing federal business (42%).

Source: Systems Integration: Markets and Trends 1991, Peter Rosati, market analyst, IDC



Why go outside?

Hiring a systems integrator for client/server applications makes good sense for several reasons, according to IS managers and consultants. They say that outside firms can do the following:

- Help choose from the myriad technology and vendor options made possible by a "mix-and-match" approach to systems architecture.
- Manage the complex relationships and problems — both technical and administrative — that arise in a multivendor environment. Outsiders can help integrate products from dozens of different vendors, tackle incompatibilities and negotiate service and support contracts.
- Design an appropriate operations and support structure that is both technically and organizationally appropriate for a distributed computing environment.
- Take a fresh, objective look at the underlying business processes that can be directly addressed and improved through client/server processing.

Alice Laplante

Companies often find that a client/server system takes real work to maintain after it's installed, Perkins says. As a result, the firm often cuts a new contract with the integrator to ensure adequate return on investment with the new system.

That squares with the experience of Steve Papermaster, chief executive officer of Business Systems Group, a Houston-based systems integrator specializing in client/server projects. He notes that the dynamic nature of the technology often means the integrator stays involved after implementation.

At Forces Command, for instance, contract terms stipulate that vendor personnel must be on site full-time to tackle any problems.

Among the postinstallation issues commonly handled by companies and integrators are data integrity and security, backup and recovery planning, support and maintenance procedures. While these functions may have performed smoothly at the data center level, IDC's Newman says, they need to be redesigned for applications running at departmental or end-user locations.

Consultants also say that having an outside integrator with keen technical and business acumen taking a fresh look at information flow can increase a return on systems investment tenfold.

"A lot of companies are moving to client/server architectures precisely because their business systems are breaking down, yet they don't ask the integrator to help them rethink the way their business works in a way that can make them more competitive," Perkins says.

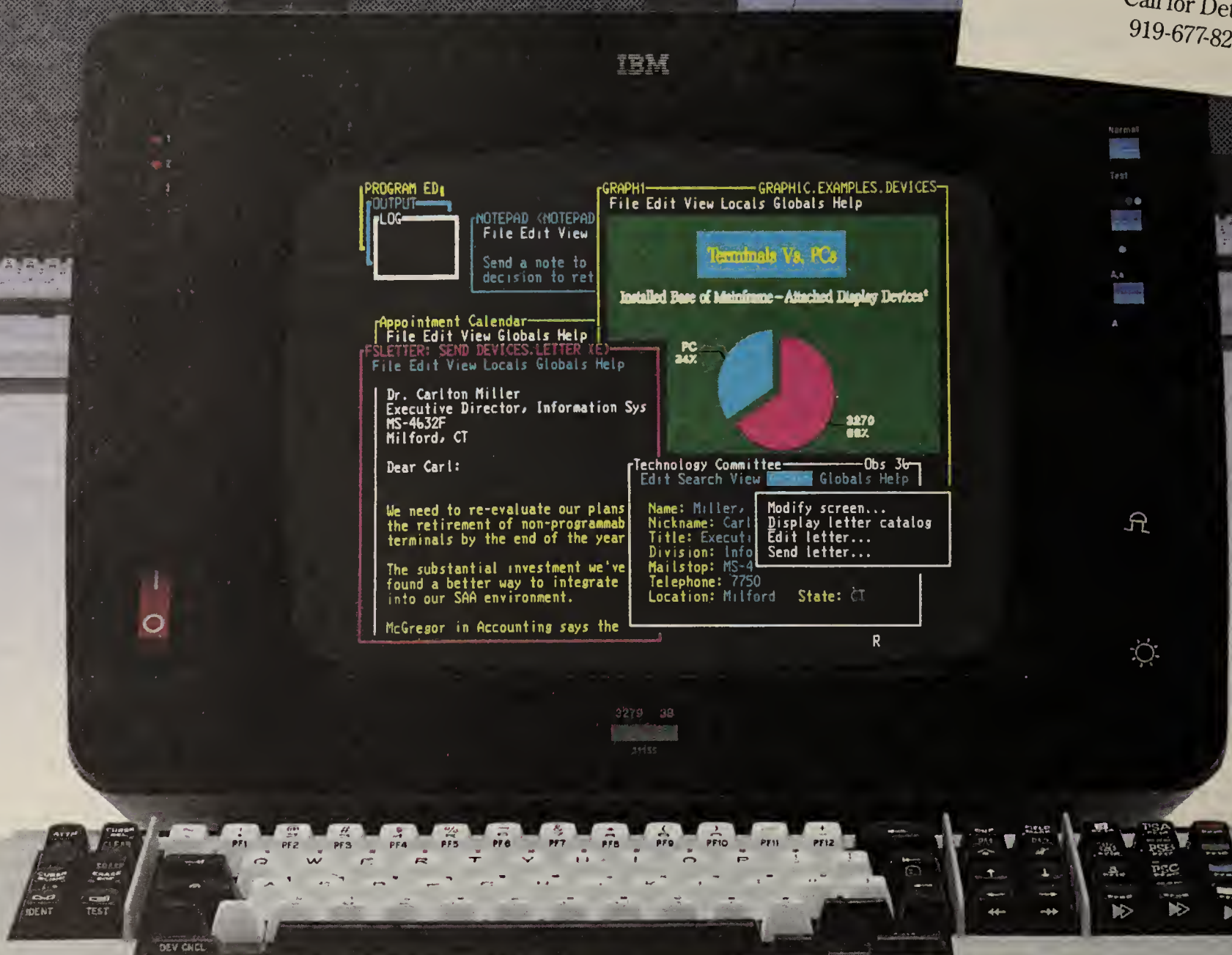
However, because of the double uncertainty about client/server technology and integration firms, many corporations are starting out small.

"We hear customers say, 'Let's do this as a pilot or prototype, make sure it works, then replicate it throughout our organization as appropriate,'" says Andy Wojcikowski, services marketing manager for low-end computing at DEC in Maynard, Mass.

Nicholas-Applegate did exactly that when it contracted out a small pilot project to start with. "In effect, we wanted to see what Marathon could do, as well as test the technical waters a bit," Sundstrom says. "This is new territory for all of us." •

LaPlante is a free-lance writer based in Palo Alto, Calif.

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Canadian utility finds client/server a gas

INTEGRATING CLIENT/SERVER

BC Gas, Inc.

BY MEL MANDELL
SPECIAL TO CW

Next month, BC Gas, Inc. will move from a paper-based environment into an age of superservers that company officials say will make mainframes obsolete at the Canadian utility by the century's end.

With a commitment of more than \$26.7 million U.S., a new client/server pact with IBM and a new software system in the pipeline, BC Gas expects to cut mainframe maintenance by 40% and realize immediate savings of more than \$1.4 million a year, says Thomas N. Young, vice president of MIS.

In January, 170 company users equipped with Intel Corp. 80386-based personal computers will be able to access up-to-the-minute databases on remote IBM mainframe superservers that are jointly owned by several companies.

A key element of the system is a \$6 million Work Management System (WMS) that will let managers track in real time such revenue-increasing jobs as initiating customer service. Based in Vancouver, British Columbia, BC Gas services 600,000 customers throughout the province.

Testing of the system, created by Andersen Consulting in Chicago, was conducted last month. Plans call for all BC Gas employees to be equipped with the workstations by the end of the decade.

Profit boost seen

Potential cost savings from the system are of key importance in helping BC Gas boost its per-share profitability, which dropped slightly last year, according to an analyst (who asked to remain anonymous) who follows the firm for a leading Toronto brokerage.

Company revenue last year was

\$616 million.

When Young came aboard in February 1990, much of BC Gas' information was handled on paper. The real-time computerization was circa 1960s: 200 employees using dumb 3270 terminals tied to a mainframe.

The major upgrade was undertaken in three steps. First, the 30-person information systems department was converted into a consulting group with no operational responsibilities.

Second, the company's only mainframe, a Unisys Corp. machine, was sold as part of an outsourcing contract to a joint venture consisting of IBM, British Columbia Telephone and Westbridge Computer Corp., a consultancy based in Regina, Saskatchewan. Called ISM, the joint venture operates several other mainframes in Vancouver to which the BC Gas workstations are connected.

Third, the \$6 million advanced WMS project was awarded to Andersen earlier this year.

Young says farming out the client/server system made sense. "It would have been impossible for us to hire and then train the people to create a state-of-the-art client/server system in less than a year," he says.

One reason Andersen landed the contract was its size: At one point, 50 Andersen employees were working on site at BC Gas. Other factors were heavy prior experience in upgrading the information systems of other utilities and the on-schedule completion of BC Gas' financial information system, Young says.

During the project, the team developed a specialized application program called Work/1, which Andersen now offers for \$375,000 to utilities worldwide, says Scott Hesseltine, the Andersen partner in charge of the project. BC Gas shares in the profits.

The workstation portion of the program, written in C, required the creation of 70 screens. The mainframe portion was written in Cobol.

The WMS, which is expected to save \$1 million a year, tracks work in progress. With the prior manual system, it was difficult to tell if jobs by BC Gas or subcontractor crews were lagging. With the new system, customers can find out when promised services will be delivered. The new



Rich Frishman

BC Gas' Young expects the utility to save more than \$1.4 million a year from client/server strategy

system will also let managers compare the performance of various contractors and crews, Young says.

Another function is speeding insurance and liability claims. The new system will quickly generate claim documentation, which should speed reimbursement and result in projected annual savings of \$140,000.

Andersen is training the first 200 users in the 1,600-person work force. Young says he expects positive reaction to WMS because users were involved in its development, from "Functional Review Panels" to scrutiny and approval by the BC Gas vice president of operations.

While BC Gas says it's too early to state precise savings, the firm expects to save \$300,000 yearly from reduced paperwork and elimination of forms.

Among the "soft" benefits expected are improved customer satisfaction resulting from faster service and better data access by company accountants.

However, the work with outside firms is far from over. A separate maintenance system contract is out for bid.

Also, IBM won the \$25 million contract for BC Gas' next client/server project, a customer service system that will be paid for by BC Gas and two other gas utilities. The system is slated for installation in mid-1993. After it is set up, Young projects that 80% of company workstations will be able to access both it and WMS.

In the long term, Young says he expects mainframes will vanish from the picture entirely by the year 2000, when more powerful PCs are expected to provide 90% of the company's computer power. •

Mandell is a technical writer based in New York.

CLOSE-UP

Company: BC Gas, Inc.

Goal: Improve speed and accuracy of paper-based work flow system serving 600,000 customers.

Strategy: Develop client/server-based system that lets managers track jobs in real time.

Payoff: Expected savings of \$1.4 million a year, faster customer service and better management reporting and control.

Systems integrator: Andersen Consulting.



Sun Microsystems Computer Corp. recently announced the Sparcserver 600MP series of general-purpose multiprocessing servers. Available in modular two- or four-processor configurations, serv-

ers are targeted for work groups and departments.

Sun Microsystems, Inc. announced Sunconnect, a business unit that will provide integration and network management for heterogeneous computing environments. The unit has its own product line but will also work with third-party vendors to tailor computer systems.

Microsoft Corp. has entered the client/server integration business. The Strategic Integrator Program teams the Redmond, Wash., firm with large integrators. Current partners include Bull HN Information

Systems, Inc., Andersen Consulting, Electronic Data Systems Corp. and Digital Equipment Corp.

"Network IQ: Integration Trends" is available from **Pacific Bell**. The collection of articles on network integration by leading authorities addresses tough strategic issues facing information systems managers. To obtain the free brochure, call Pacific Bell's Data Communications Group at (510) 823-6191.

DEC introduced new Unix-based workstations and software for client/server computing. New reduced instruction set computing (RISC) Unix

servers include the following: desktop Decsystem 5000/25 (\$4,995); the upgradable Decsystem 5000/240 (\$13,495); and the Decsystem 5900 server (\$59,050). Two software products for Ultrix networks and servers were also announced: The NAS 200 for RISC/Ultrix links personal computers, Apple Computer, Inc. Macintoshes and workstation applications as well as permits data and file sharing among work group members. The NAS 300 allows customers to distribute client/server applications across different systems. Both products are scheduled to be available in January. Pricing starts at \$2,720.

Brewers: Two heads are better than one

Merged Canadian breweries combine IS departments and look to client/server for future

INTEGRATING CLIENT/SERVER

The Molson
Cos.

BY ANN DOOLEY
SPECIAL TO CW

Two of Canada's largest breweries weren't about to cry into their beer when changing trade barriers, skyrocketing regional costs, underutilized plants and a Canadian law requiring that beer be brewed in the province in which it is sold threatened to pour business down the drain.

Molson Breweries of Canada Ltd. and Carling O'Keefe Breweries of Canada Ltd., the second and third largest brewers of Canadian beer, decided that teamwork was the only way for them to survive and prosper. But when the longtime competitors merged into an equal partnership in 1989, neither was anxious to let its information systems be scrapped.

To avoid what could have turned into a nasty brawl, the breweries called in Chicago-based management consulting firm and integrator A. T. Kearney, Inc. to quickly and objectively examine existing systems and recommend within six weeks the lowest risk, lowest cost way to meet corporate strategy.

"The total focus was how to end up with a merged company," says Joseph Izzo, a Kearney vice president who headed the Molson project.

The three-year objective was to close seven of 16 small provincial breweries and reduce the work force by 1,700 employees. The challenge was to quickly consolidate functions, facilities and activities with minimum disruption to ongoing business.

To complicate matters, two vastly different IS philosophies were at work: Molson was enterprise-orient-

ed, while Carling practiced traditional data processing. Molson's 100-member IS staff was very interested in "bleeding-edge" technologies; Carlson's 16-person IS department used technology only for basic functions. Molson spent \$13 million a year on IS, Carling about \$2 million.

What's more, Molson's sophisticated IBM 3090-based network offered electronic mail, voice mail and other services to users across the U.S. and in Canada. Carling used Digital Equipment Corp. and Hewlett-Packard Co. minicomputers, mostly for nuts-and-bolts applications.

Molson's aim was to merge, purge and enhance systems as well as plan for a future architecture. Except for

were analyzed through roundtables with users, IS and management. "They were constantly pushing us to justify," recalls Sheldon Bell, senior vice president of planning and control at The Molson Cos.

In the end, the team decided that moving to Carling's older system would be more costly and would delay the merger of the IS staffs by as much as a year. The solution was to migrate all systems to a variation of Molson's IBM 3090 mainframe/personal computer network system for the short term, with an eye to client/server technology.

Within 18 months, all systems were integrated, and IS spending had been slashed to \$10 million. Hardware was dramatically reduced, communications streamlined and entire systems eliminated. Operating costs were reduced by more than 33%, Izzo says.

Problems arose, however, when several key IS staffers took a generous severance package. Kearney's role was extended to management responsibility for 10 months. Besides completing most of the migration, the consultancy's task was to train and stabilize staff and get the new information system up and running.

The final task was to design an information architecture to meet future business demands.

To do this, senior functional and divisional managers from across the company analyzed and recommended how Molson could best use information technology. The team created an integrated business process system based on client/server technology.

The plan seems to have worked. Today, profits are up, and costs are down, says Philip Koven, an analyst at Richardson Greenshields of Canada Ltd. in Toronto. While Koven says earnings will likely level off, "there are probably a few more quarters of above-average growth" ahead for Molson.

Currently, the No. 1 implementation priority is a closed-loop manufac-

turing resource planning II system that will be integrated with key company functions. All new applications for the environment will be developed using IBM Application System/400s as the client/server.

IS staffing was reduced by close to 30%, telecommunications and hardware costs were reduced by about \$1 million a year — by dropping the E-mail system — and a future technology strategy was developed suited to the new company's business needs. The combined IS staff numbers about 80.

Bell advised others contemplating using an outside integrator to make sure to manage the integrator through cost justification and agreed-on objectives using milestones, reviews and measurable targets.

"In choosing an integrator, it's not the organization itself — it's the individuals that are most important," Bell says. •

Dooley is a free-lance writer based in Framingham, Mass.



Molson Breweries mixed two vastly different corporate IS philosophies

the development necessary for such a system, no new systems development would be done. Projects in progress would have to be rejustified for bottom-line impact.

The combined \$15 million IS budgets would have to be reduced, while multiple and incompatible platforms, databases, systems and applications would be integrated. And recommendations had to be made in six weeks.

"We weren't always trying to get the best system," Izzo says. "We were trying to select the one that would get the companies merged most quickly."

Business needs and objectives

General Foods nipping user problems in the bud

How do you keep user departments from constructing a nightmarish tangle of client/server applications? Beat them to the punch, that's how. That's the tactic used by General Foods USA in White Plains, N.Y. While most companies build a client/server infrastructure around a specific application, the \$6 billion food giant installed the local- and

wide-area networks needed for a solid client/server architecture before developing applications to run on it.

"We knew we needed to be ready for the client/server environment before we actually built any applications," says John Polo, chairman of the LAN Council at General Foods.

The company, Polo says, simply couldn't take the chance of each division diving into client/server on its own. So company officials decided to establish an enterprisewide architecture to ensure maximum support and compatibility.

To do this, General Foods orga-

nized a LAN Council, made up of representatives from every division. Core network production requirements were drafted and put into place last year. Now, Polo says, they are ready for applications.

To assist in the efforts, General Foods hired Evernet Systems, Inc., a Los Angeles-based commercial systems integrator. Polo says Evernet beat 11 other contenders because of its size, ability to support a large national network and independence from any particular hardware, software or network operating system vendor.

"We're operating in a multivendor, multifunctional world," Polo says, "and we needed a company that could

respond to that."

Evernet handles support of existing LANs and WANs and design and installation of new or expanded networks. In addition, Evernet representatives sit on the LAN Council and provide feedback on technology decisions affecting the network.

"We are so widely dispersed that we simply couldn't implement that kind of support mechanism internally," Polo explains, adding that Evernet will also be allowed to make non-preferential bids on applications development projects undertaken by individual divisions.

In future phases, the LAN Council will review all proposed applications development projects to ensure compliance with General Foods' overall networking plans. •

ALICE LAPLANTE

IN DEPTH

THE IN DEPTH INTERVIEW

Mitchell Kapor

'There is an opportunity for people who care about the social impact of all this technology to take a stand'

You'll likely find Mitchell Kapor's name on any short list of personal computer industry pioneers, a list typically rounded out by the likes of Bill Gates and Steve Jobs.

But unlike Gates and Jobs, who clearly like being at the helm of big computer companies, Kapor, the Yale graduate, former disc jockey and

transcendental meditation teacher, has turned his back on corporate management since his departure five years ago from Lotus Development Corp., the company he founded.

Deciding to leave wasn't tough, according to Kapor, who says that the five years he spent at Lotus "felt like 20" and that he was simply burned-out. "I was a prisoner of the spreadsheet."

The man who gave the world 1-2-3, the best-selling program in computer history, says he has no burning desire to run a company or to try and build a second magnum opus. "He's one of the few people in the industry with the common sense not to try to do it again," says Esther Dyson, longtime industry watcher.

While Kapor did start a local-area network software outfit in 1987 called On Technology, Inc. in Cambridge, Mass., he is out of the day-to-day running of the company, serving as its chairman/adviser/elder statesman.

Kapor's current passion is the Electronic Frontier Foundation (EFF), a watchdog organization he helped found in May 1990 with the mandate to track and shape public policy on computer-based communications media and networks. The wealth Kapor realized from Lotus — some estimates peg it at upwards of \$200 million — has allowed him to pursue this passion full-time.

Kapor, 41, grew up in the home his parents purchased for \$20,000 in 1953 on the south shore of Long Island, N.Y. Of his parents, who still live in the same

house, Kapor says: "They're extremely down-to-earth, unpretentious people who believe in the virtues of family and hard work."

Kapor has adopted those values as his own. He claims Edison, Ghandi and Groucho Marx as his greatest influences and jokes that one of his biggest frustrations is trying to teach people the correct pronunciation of his name: "KAY-por," not "Ka-POOR."

"After years of trying, I may just legally change the pronunciation," he says laughingly.

Computerworld sent freelance writer Glenn Rifkin to talk to Kapor in the Cambridge offices of On Technology and EFF.

Q You have become quite outspoken about public policy in your role with EFF, but some people write you off as a famous computer person defending hackers. Are you worried that people don't take you seriously as a policymaker?

A There is a narrow and increasingly isolated community that believes that. Many of them read *Computerworld*. That's one of the reasons I'm doing this interview. I would like to be taken seriously. EFF was never about defending hackers. It's unfortunate it was interpreted that way.

The industry is creating a new media, digital media, the on-line world, cyberspace. It is a frontier territory the way television was

in the 1930s and '40s. The ground rules aren't firm yet. Therefore, there is an opportunity for people who care about the social impact of all this technology to make a stand, to try and see values of openness and freedom and civil liberty and competitiveness in this technology.

All we are saying is that we need to make conscious choices

doesn't look at a computer this way at all?

A We've had enormous success with the law enforcement and policy community on this. One reason I'm heartened is because I haven't heard anybody suggest that these media are not constitutionally protected. The typical issue that comes up is



Seth Resnick

in regard to this new media. We believe very strongly that when people are using electronic mail or bulletin boards and are engaging in constitutionally protected acts of speech, the Fourth Amendment absolutely applies. We have to get serious about applying that in practice so we don't abuse people. The message comes down to that.

Q Is there still the sense that the general public

"Yeah, but we've got to catch crooks, and nowadays crooks are using computers."

I agree they are. There are spirited discussions about how to balance the interests of property holders and their rights against it being stolen and the rights of people using systems to communicate.

But the terms of the debate have fundamentally shifted since we showed up.

Continued on page 74

Continued from page 73

What EFF did was catalyze and put into words what people on Internet were feeling. We didn't invent any of this stuff. We created a single conduit among the three million people on Internet and other systems, the policy community in Washington, D.C., and law enforcement.

I admit that I happened into this. I have a propensity for wandering into things.

Q How did you 'wander into' this ethical policy realm?

A I was on-line. I've been fooling around with computer bulletin boards for as long as they've existed. About two years ago, I got onto a conferencing system called The Well where there were a lot of very smart people hanging out discussing all manners of things: the Information Age, hackers, the culture of cyberspace.

I got to know people like [EFF co-founder] John Perry Barlow. So when Operation Sundevil and other computer seizures occurred, I was in a community of people who were interested in following and discussing these issues. It became clear that on the Internet, there was an enormous sense of outrage about this. We started thinking, "What could we do?"

Q How did the Electronic Frontier Foundation get started?

A It was a response to perceived abuses in law enforcement and came out strongly as a proponent of computer users' civil rights and liberties. We've been pretty successful, although you never win. It's an ongoing battle. But right from the very beginning, a year and a half ago, our mission was to look broadly at the social impact of these media and try to help promote policies that civilize cyberspace.

We've lately gotten increasingly involved with a whole bunch of information infrastructure issues about networking and the future of public-switched telephone networks and questions of Integrated Services Digital Network and fiber to the home and how all that should be done.

Q Where does it go from here? Are you interested in a political career?

A I don't want to sound like Mario Cuomo, but I have absolutely no plans to run for anything today or for the foreseeable future. For one thing, I'm going up a steep and prolonged learning curve about how politics works. I wouldn't make any decisions of that nature until I get up the learning curve.

The second thing is that if you run for office, you have to expect to give up your private life and past. I don't have too much of a problem with that for myself; I've been relatively open in the past about my youthful escapades. But I'm not interested in seeing members of my family come under that kind of scrutiny. I may look at the situation quite differently when my kids are older, so ask me in about a decade.

Q Why did you leave Lotus in 1986?

A Spreadsheets have been very, very good to me, but I felt trapped. Some people, like Bill Gates or Philippe Kahn, really come into their own standing at the helm of one of these great corporate enterprises and like nothing better than to develop and wield the power that comes

with being in that situation.

I had quite a different experience. I felt increasingly responsible to more and more groups of people — not only shareholders but securities analysts, our corporate sales force and customers. I felt that I couldn't follow my own destiny and hold those responsibilities simultaneously.

I was interested in a lot of other things — other products and software design and things that I've gotten into now. I could tell that being there was not compatible with what I wanted to do.

There were other factors as well. The very rapid growth of Lotus, combined with my own inexperience in managing it, left me in a somewhat disadvantageous position. I didn't understand how to institutionalize more of my own values and approach in an organizational setting. I was pretty much behind the eight ball on that. I decided it was not a fight worth having.

Q Were fights brewing at Lotus at that time?

A Tensions. I experienced a lot of inner tension about copy protection. I wanted to take copy protection off very early. Other people did not, and that was the point of view that won. Ultimately, it did come off, but years later. I'm not a big fan of "look and feel" lawsuits, as the public record shows. Other people were pursuing those initiatives.

Those kinds of issues were there — either on the surface or under the surface — and there was a question of whether I wanted to throw myself into a struggle to try to redirect things more along the lines I'd be happy with, and I decided not to.

Q Were you shocked when you heard that Lotus was planning to sell its Marketplace database product?

A I didn't find Lotus' claim with that product — that somehow it was going to screen out the purchasers to avoid abusers who were going to prey on rich widows — credible.

I'm in favor of exploring the degree to which there is public sentiment for more

protection of privacy concerning information about individuals, everything from credit records to selling mailing lists. I would hope as a society we would form a consensus that says we need to enjoy a greater degree of legal protection than we currently have.

Internet, including source code to stimulate commercial development.

Q Things given away free tend to be perceived by people as not being that good. Don't you think you'll run up against this perception?

Prodigy's rights

The recent Prodigy case in which alleged anti-Semitic messages were posted on the bulletin board [CW, Oct. 28] is the kind of issue that fuels the EFF's fire. Here's Kapor's take on it:

"I thought it was heartening that the *New York Times*, *Washington Post* and others had editorials telling the Anti-Defamation League to back off because Prodigy was within its First Amendment rights in deciding what to carry and what not to carry, even if one believes that Prodigy's editorial policy about what it selects is in need of improvement. It is such cases that will bring this to people's attention. I also believe if Prodigy fails, it will have a very negative impact on the climate for any future investment in on-line services."

Q Do you have any contact with Lotus President and Chief Executive Officer Jim Manzi today?

A We live in more or less the same neighborhood, and our kids are friendly with each other. I see Jim at children's birthday parties.

Q You've said in the past that one problem with the PC industry is the lack of easy-to-use systems. Are you planning to address that problem yourself?

A I am. I don't talk about it a lot because nothing's ready to show, but I'm actively doing software design. It will be part of the EFF. I've been looking at E-mail on the Internet and computer conferencing and digital file transfer because I have the same criticism of them as I do of PCs: too hard to use, not smoothly integrated.

So I've been designing various E-mail and conferencing front ends and information-retrieval systems. I'm looking to start a small development group within EFF. [Its software] will be Internet-oriented with the intention of giving it away in the spirit and manner of software on the

A Internet is the exception to that. There is a culture of free software, and some of the best stuff is on the Internet. You can go and pull off the source code and work on it.

Believe me, if I develop something and somebody else takes it and commercializes it, I think I'll be happy. I'm not motivated by the thought of making more money. I'd like to see more people get more good products, and if other people can make money in the process, that's fine. It's very American.

Q What do you think will be the implications of commercializing the Internet?

A One positive implication is that companies can use the commercial Internet as a resource to connect their sites as an alternative to a private network. But also, it is a marketplace, a way for people to conduct electronic commerce, to talk to their customers, to deliver services. There's a base of free software and increasing amounts of commercial software.

Q Is there resistance to this idea of open exchange?

A There are some concerns about security. Those are not entirely unfounded. There aren't many companies on the 'Net. Apple, Sun and Next have significant presences, but they all have firewalls up. They put up barriers to insulate themselves from the curious and the malicious.

That's not that hard to do. But many people don't know how to do it because Unix security is a bit arcane, and you need a technical specialist. So it's easier for a vice president of IS in some big corporation just to say, "We're not going to touch this stuff 'til they straighten all that out." I'm sympathetic to that.

Q What would you like to be remembered for at the end of your career?

A I'd like to be remembered as a software designer, not just of 1-2-3 but also of things like Agenda and other products I've worked on and ones still to be invented. And as an entrepreneur.

My new phase is to try to be an effective advocate for public interest causes in a technically informed way. I'd like to leave a legacy of someone who's been successful in that and helped organize broader awareness on those issues. •

Commitment to ease of use falls short of mark

Mitch Kapor sees the lack of easy-to-use systems as a thorn in the side of the PC industry now and for some time to come:

"The basic platforms that people depend on — DOS and now [Microsoft Corp.'s] Windows — lack a degree of intuitiveness and cohesiveness that just presents barriers and creates frustration.

"I made a special trip to Redmond, Wash., to see Bill Gates earlier this year with that agenda item. I said, 'If ease of use was as important to you as pen computing, and you stuck your neck out on it, that would be a good thing to do.' The only reason I mention [Microsoft] first is they've been so successful and control the platform.

"The reaction I got was that it is very important to them, and they are working on it. Windows is definitely a step or two ahead of DOS. On the oth-

er hand, I think this still falls short of the intensive kind of commitment that I'd like to see. Until the ease-of-use issue changes, computing is going to be this techie kind of thing, and that's a loss.

"The next big round of battles on ease of use will be on interactive home multimedia players. It'll be important to watch what IBM and Apple [collaborate on], or what Nintendo might do or perhaps Microsoft or the Japanese. Multimedia will be a new platform that will spawn computers, sure enough. But if they are going to be successful as consumer appliances, they have to solve the ease-of-use problem.

"One way to do that is give them trivial functionality, make them half a notch better than videocassette recorders. But I'm hoping that firms will be more creative and ingenious than that."

NATIONAL BRIEFS

Lucky 13

► For the second year in a row, overall revenue in the **computer services industry** increased by 13% in 1990, this time reaching \$62.8 billion, according to market research firm **Ledgeway/Dataquest**. The firms surveyed represent approximately 75% of a \$90.9 billion worldwide market; some 58% of their combined 1990 revenue, according to the survey, came from overseas. While the group's productivity gains have decreased in each of the past four years, 1990 showed an 11% increase — partly as a result of industrywide staff cuts.

Still profitable

► The high cost of cutting back — particularly of voluntary severance programs that some 3,300 employees opted to accept — toppled **Hewlett-Packard Co.**'s fourth-quarter operating profit increase to a 49% net profit slide, on quarterly revenue up 7% to \$3.8 billion. The onetime hit notwithstanding, HP managed to post a 2% net earnings increase for fiscal 1991, on revenue up 10% to \$14.5 billion.

Join the club

► **Pacific Telesis Group** late last month joined a handful of firms that are attempting to solve two mounting domestic crises — the education deficit and the swelling ranks of the managerial-level unemployed — with a little synergistic creativity. Employees of the San Francisco-based telecommunications company who opt for one of its recently announced early severance packages will also get the option of going back to school to train for K-12 teaching — tuition courtesy of Pacific Telesis. Firms offering similar programs include **AT&T**, **Chevron Corp.**, **IBM**, **Rockwell International Corp.**, and **Eastman Kodak Co.**

Done deal

► **Cray Research, Inc.** President John Rollwagen told the firm's employees last week that the federal bankruptcy court had given a thumbs up to Cray's proposed acquisition of **FPS Computing** assets, making the deal final at the end of a standard 10-day appeals period that ends later this week. Cray is still working out the business plan for incorporating FPS.

Hybrid net trend to link rival suppliers

Private vendors and public telecom carriers will need to work together to maintain market share

BY JOANIE M. WEXLER
CW STAFF

Corporate users are preparing to dump burgeoning quantities of data onto wide-area networks, leaving private equipment vendors and public telecommunications carriers in a bit of a catch-22: Those seeking to maximize their respective pieces of the revenue pie will have to share.

Users and analysts agreed that corporate data networks will become increasingly hybrid — crossbreeds of dedicated private leased lines and sophisticated carrier network service offerings. This means carriers and vendors will have to perform a cooperation/competition balancing act to satisfy companies looking at hybrid configurations.

One such user is the Southern California region of the Kaiser Permanente Health Plan, Inc. "We need a very heavily intercoupled hybrid network," said Tom O'Sullivan, network design and development manager for the Pasadena, Calif.-based health maintenance organization.

O'Sullivan said he expects Kaiser's data-to-voice ratio to flop from the 20-to-80 ratio it is today to 80-to-20 by the end of the decade.

With such hybrid scenarios in mind, traditional T1 multiplexer companies are outfitting their

equipment with standard mechanisms for accessing public networks.

These moves represent an acknowledgement that they are going to have to yield some business to public carriers as they compete directly for frame-relay traffic and as high-speed public-switched technologies, such as Switched Multimegabit Data Service (SMDS) and Integrated Services Digital Network, become widespread next year.

"In the near term, there is going to be a displacement of existing leased-line traffic to public frame relay and SMDS," predicted Tom Nolle, president of CIMI Corp., a consulting firm based in Voorhees, N.J. Nolle said that in a recent CIMI study, 67% of 267 large companies characterized their upcoming wide-area applications as "public."

A private matter

However, Tim Halvorson, a communications project leader at Minneapolis-based Northwest Airlines, said that while he anticipates some hybrid networking, "a lot of our data traffic will stay private. The carriers have not instilled much confidence in us that they can handle data effectively" at the local or interexchange level, he said.

But most analysts agreed the carriers have earned credibility

with their economical voice-oriented virtual private networks — for instance, AT&T's Software Defined Network, U.S. Sprint Communications Co.'s Virtual Private Network and MCI Communications Corp.'s Vnet.

WAN wave

The frame-relay market, which straddles public and private WANs, is one growing source of overall telecom revenue

U.S. public frame-relay service revenue forecast

(in millions of dollars)

1991	\$4
1992	\$98
1993	\$298
1994	\$683
1995	\$1,093

Source: Vertical Systems Group
CW Chart: Janell Genovese

Many companies have placed much of their voice traffic onto these "reserved chunks" of the public network, swinging the pendulum back to the public arena, said Rick Malone, a principal at Vertical Systems Group, a consultancy in Dedham, Mass.

Data traffic flow will be driven largely by economics, he said. "If the carriers and vendors wind up providing equal capabilities, the users will look to see which ser-

vice is the cheapest."

Dominant interexchange carriers AT&T and MCI have nothing to gain in the near term by offering frame-relay services because the revenue they stand to lose in leasing private lines is greater than what they will reap with the services, Nolle said.

They are offering the services, however, because "if you're going to lose your leased-line revenues, you might as well lose them to your own customers."

Intense competition

The good news for both camps is that increasingly heavy WAN data traffic will give all players more business to contend for. For example, the U.S. public frame-relay market alone is expected to grow from \$98 million in 1992 to more than \$1 billion in 1995, according to Vertical (see chart).

"It's difficult to predict where the revenues will fall," said Karyn Mashima, vice president of marketing at wide-area vendor Network Equipment Technologies, Inc. (NET) in Redwood City, Calif. For NET, which manufactures T1 multiplexers and other equipment, "carrier compliance and interoperability are a given, not a choice," Mashima said.

NET recently reinforced its
Continued on page 76

Sunken barge spurs titanic recovery at EDS

BY NELL MARGOLIS
CW STAFF

DALLAS — In the announcement heralding the third annual Jason project — a several-day, multinational broadcast slated to beam on-site underwater exploration data from the Galapagos Islands to some 700,000 students and 10,000 teachers across the U.S. and Canada — corporate founder/sponsor/systems integrator Electronic Data Systems Corp. allowed itself a promotional boast. "EDS has 29 years of providing technological solutions to business problems, but Jason posed some unique challenges."

The company had no idea how ironically right it was about to be.

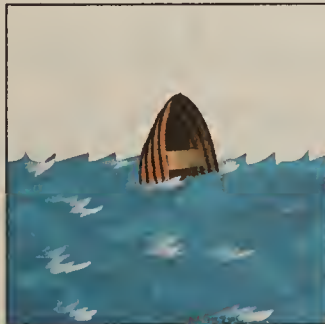
Less than two weeks before

broadcast time, the barge carrying all the equipment needed for the Jason broadcast sank off the coast of Ecuador.

Last week, however, Jason was on time for school, delivered through the combined efforts of EDS, San Jose, Calif.-based video compression technology vendor Compression Labs, Inc. (CLI), the Woods Hole Oceanographic Institution in Woods Hole, Mass., a slew of corporations and nonprofit groups throughout the U.S. and a last-minute grant rustled up by the National Science Foundation (NSF).

The original Jason game plan

hinged on compressed digital video technology: an indispensable element, according to EDS Telecommunications Services Division Vice President Keane Taylor, because analog signals strong enough to transmit video from the Jason project's traditional undersea sites would have required equipment too heavy to transport on a vessel.



In the wake of the accident, said Timothy Armour, director of the Jason Foundation for Education — the nonprofit organization created several years ago to run the award-winning project — crews worked around the clock to orchestrate and implement the replacement technology under EDS coordination.

Scientists at the Woods Hole institution and CLI donated equipment and brought compressed video back into the pic-

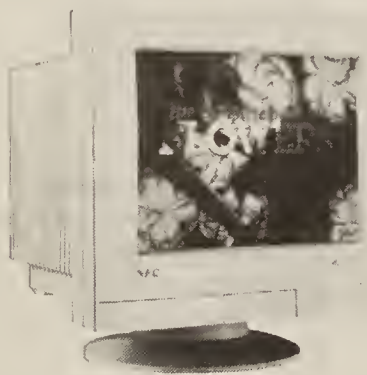
ture — a feat that was in question in the early hours of the reconstruction. Turner Broadcasting System, Inc. supplied the necessary broadcast equipment.

"Then came the really hard part," EDS Special Projects Director Diane Spradlin said: Getting the equipment from Quito, Ecuador, where it had been brought together, to Isla Baltra in the Galapagos, substituted for the less accessible original Jason site at Isla Fernandina to fit the suddenly short time frame.

EDS appealed to the U.S. Air Force. Jason, however, did not fit the requirements for emergency military aid. With only hours to spare before the time window slammed shut, Spradlin said, the NSF came up with a grant that covered the cost of a private charter to rush 12,000 pounds of equipment to Baltra, where a tent city was quickly put up to protect it.

"I've just seen the first broadcast, and it looked great — students were talking to an underwater diver," Spradlin said.

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IBM reforms distribution in Europe; VARs to sell all lines

BY MARC BENITAH
IDG NEWS SERVICE

PARIS — Starting sometime in the first six months of 1992, registered IBM Personal Computer distributors and resellers, IBM Application System/400 mid-range agents and RISC System/6000 value-added resellers (VAR) can market all three product lines in Europe. The decision, which is expected to increase sales in IBM's core product lines by 3%, is a historic one for the giant computer manufacturer, marking a departure from a strategy adopted in 1983.

"I have the pleasure of informing you that after 10 years of marketing network development experience, we would like to, starting in 1992, once again advance our business partnerships," wrote Claude Andreuzza, IBM France managing director, in a recent letter addressed to the company's marketing partners. "A single, permanent marketing partnership contract with access to IBM offerings [is] extended, according to your performances, [with] payment of services deter-

mined by your added value and a more effective communication of our strategies in channels, markets, solutions and software and services — these are some of the key elements of the new lines of cooperation."

A veritable distribution revolution, IBM's new policy is constructed along two axes. All registered distributors' channels, agents and VARs will distribute the entire IBM product line after demonstrating their competence.

The plan also comes with an IBM promise to take into account certain criteria — the international dimension, IBM's portion of the total sales volume and especially, added value — in its delivery volume. "For the moment, it's just a statement of intention," explained Michel Aguerreberry, chief executive officer of France's No. 1 computer distributor, Agena. "IBM has not announced, for the moment, a single contract."

IBM's intent to overhaul its distribution channels is clear. In mid-November,



the directors of the company's marketing channels visited distributors to confirm the changes. A more detailed communique is already planned for the end of this month.

IBM is also responding to the longstanding complaint of specialized resellers who want to distinguish themselves from large department store distributors that offer little added value. "No more cuckoo birds [i.e., large distributors]," said Jean-Francois Flouquet, co-president of France-based Random. "Those which made a nest from selling IBM products, laid out in solution and engineering terms, could until now be dislodged by the first cuckoo that came along who benefited from the same deliveries."

"IBM will also differentiate the single and multimark [distributors]," said Marc Levy, president of Ardia, an association of French IBM resellers, "not only in terms of supplementary deliveries but in cofinancing marketing, communications and training initiatives. And also by combining efforts among IBM's forces and the single-mark IBM channels, notably on winning operations in the market."

Benitah writes for Le Monde Informatique, an IDG Communications French publication.

INTERNATIONAL BRIEFS

Europe in the picture

► Videoconferencing player **Picturetel Corp.** late last month sharpened its focus on the overseas market by buying up one of its European distributors. UK-based **DCE Communications Group PLC** has served the Peabody, Mass.-based vendor since 1988; last month's transfer will tighten Picturetel's control of its direct distribution not only in the UK but also throughout Europe, the Middle East and Africa, according to the company.

Norway Dell-ivery

► **Dell Computer Corp.**'s international sales, which mushroomed from 4% of total revenue in 1988 to 34% in 1991, are sending a message that the booming personal computer manufacturer is not failing to heed. Late last month, Dell increased its Scandinavian presence — already established in Sweden and Finland — with the opening of a wholly owned subsidiary in Oslo.

But certainly not Dopey or Sleepy

► **International Telecom Japan, Inc. (ITJ)** and **International Digital Communications, Inc. (IDC)**, two of the overseas carriers established in Japan in 1989 to compete with former monopoly **Kokusai Denshin Denwa Co. (KDD)**, saw sales increase 70% or more in the first half of the current fiscal year, which ends next March. ITJ's sales rose 70% to \$87.4 million, while IDC logged a 103% jump to \$78.5 million. Dramatic rises notwithstanding, however, both firms remain dwarfed by KDD's \$889 million in sales during the same period. In addition, neither of the growing newcomers has turned a profit yet.

Hybrid trend to link rival suppliers

CONTINUED FROM PAGE 75

market position by introducing a virtual network application, which allows users sharing a private network to partition and manage their portion of the bandwidth [CW, Dec. 2]. The firm was also the first WAN vendor to pledge support for the Open Software Foundation's Distributed Management Environment, the intended nirvana of standard, enterprise network and systems management.

"The equipment vendors are selling standards as a feature" to better compete, Malone noted. However, as in other areas of the computing industry, "their add-on business is in jeopardy because of standards," he said.

Partly in an effort to outrun this second catch-22, the wide-area equipment vendors are attempting to stretch flexibility

to the point of offering virtually everything to everyone.

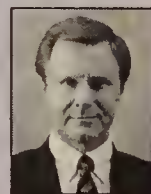
NET competitor **Timeplex, Inc.**, for example, is now positioning itself as an enterprise networking vendor, offering routers and local-area network management in addition to its T1 equipment.

"Since most data traffic is being driven by LANs, we're going to do for people with routers what we did for them with T1 multiplexers," said Timothy Zerbic, Timeplex's vice president of advanced technology. "The whole idea is collecting traffic and managing it."

He added that Europe in 1992 should afford more opportunities for the company and offer cheaper, more similarly priced leased-line tariffs across international borders.

EXECUTIVE CORNER

Magni Systems names new CEO



Magni Systems, Inc. recently appointed industry veteran **Roger Reak** to serve as its president and chief operating officer. Most recently

with Chips and Technologies, Inc. as general manager of the Graphics Division, Reak is known for his expertise in graphics and multimedia products. Based in Beaverton, Ore., Magni also offers desktop video products geared to the multimedia market.

Sacramento, Calif.-based **Unify Corp.** has announced the appointment of **James J. Hammock** as chairman and chief executive officer. Hammock, 49, most recently served as president of the Integrated Circuit Group of elec-

tronic design automation products vendor **Mentor Graphics Corp.** Unify is a supplier of database-independent applications development technology for open systems.

The board of directors at **Dell Computer Corp.** has elected **Tom Luce** a member, expanding the number of Dell directors to five. Luce, 51, currently serves as chairman and chief executive of **First Southwest Co.**, a Dallas-based investment banking firm. He also remains Of Counsel to the law firm of **Hughes and Luce**, which he founded in 1973. As managing partner, Luce oversaw the \$2.5 billion merger of Electronic Data Systems Corp. and General Motors Corp.

COMPUTER CAREERS

There's a fine line between enough variety and too much

BY JULIA KING
SPECIAL TO CW

At the beginning of this year, Alan Ditchfield was living in Washington, D.C., and working at a challenging and enviable job at MCI Communications Corp. As vice president of systems engineering, Ditchfield oversaw the design and development of switching technology, the very backbone of MCI's long-distance telephone business. Soon he was due to be promoted to take charge of all systems engineering for the carrier.

But in March, Ditchfield left MCI and moved to Cleveland to become vice president of information systems at The Progressive Corp., a Mayfield, Ohio-based specialty insurance firm. "Never was it in my mind to end up in Cleveland. And it wasn't that there was no longer a challenge at MCI," Ditchfield says in explaining his job hop. "It's just that I thought this challenge [completely redesigning Progressive's IS operations] was bigger. That's why I moved."

Like climbers who scale mountains simply because they are there and they are taller, IS workers — from entry-level programmers to chief information officers — seem to switch jobs primarily for the chance to test their skills against bigger and

more complex challenges. In answer to the question of how long is too long in a single job, professionals at all levels seem to agree that the obvious time to leave is when the challenge has worn off.

That was why personal computer analyst Michael J. Libretti left a New York investment firm in 1989 after less than two years on the job to assume another PC analyst position at Lever Brothers Co., a consumer goods manufacturer in Englewood Cliffs, N.J.

"At the age of 26, it was a little disheartening to feel like I knew everything I needed to know to do my job well," Libretti says. What the job at Lever Brothers offered, he says, was a chance to expand his knowledge beyond PC computing to mainframe applications, which he now develops for the company.

"When a job becomes too stagnant, and there is nothing new to learn, it is time to go," he says, noting that at Lever Brothers, he continues "to learn something new every day."

Looking back on his move, however, Libretti says that had he been married with a family or had the financial responsibilities that come with owning a home,

his decision to switch jobs may not have been so easy. In exchange for security, he probably would have been more tolerant of work he found unfulfilling, he says.

In seeking out new challenges, the best place to go may not always be a different company, according to Suzanne Fairlie, president of Pro Search, Inc., a Philadelphia-based recruiting firm. What is preferable, she says, is for IS staff members to find new challenges in another department or different division of their current company.

"Changing positions within a company is better than changing companies because it shows

stability as well as growth," Fairlie says. "Hiring managers do want to see people willing to take on a new challenge and people who can take on projects without a lot of mentoring, but if they think you are a person who will leave every 1½ years, they're not interested," she says.

At the same time, Fairlie notes that most companies have come to realize and accept that "company loyalty doesn't exist anymore." To this end, employers generally are not surprised to

see that potential hires — even relatively young people — may have worked for more than one company over a period of only a few years.

"But what employers do want to see are the growth and accomplishments that come from going from position to position," she says. "There's a balance between job-hopping and job stability."

The center of that balance, however, can be difficult to pinpoint, largely because individual employers calculate it differently.

For example, at John Deere Life Insurance Co. in Jacksonville, Ill., IS Vice President Ray Vasey says he is "not attracted to individuals who have had a lot of different jobs over the years." To him, this demonstrates instability.

Diversity is desirable

Meanwhile, David Billings, vice president of information and technology systems at Airborne Express in Seattle, says he would be hesitant to bring in someone who had worked exclusively for a single company.

"What I would prefer to see is a diversity of experience in approximately three-year blocks," Billings says.

There are IS professionals for whom a long-term commitment to a single firm has paid off.

Among them is Vasey, who joined John Deere 12 years ago as a programmer/analyst and moved up through the management ranks to his current posi-

tion as IS chief. He got the job, he says, "by standing up and taking the initiative."

"After my previous manager left, the company asked me to help evaluate resumes of pro-

"CHANGING POSITIONS within a company is better than changing companies because it shows stability as well as growth."

SUZANNE FAIRLIE
PRO SEARCH

spective replacements," he recalls. "I asked for a shot at it, and it panned out for me."

However, requests for promotions and even for transfers to lateral positions within a company are not always so easily accommodated, according to Fairlie. Managers at most companies, she says, want to keep IS experts in their current positions rather than give them over to other departments.

"That is why it is good to look at a company that is large enough to offer a lot of different opportunities and one that encourages movement within the company," she says.

To find out a company's policy, Fairlie advises applicants to ask during the interview process about the length of time employees spend in a particular group or department.

King is a free-lance technology writer based in Ridley Park, Pa.



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Certification not an easy out

Fast Track is a twice-monthly column dedicated to answering questions on career directions.

BY MAX STEINER
SPECIAL TO CW

Q I have about 10 years of experience in data processing and have been quite successful up to now, even though I don't have any college education. Do you think getting certified in certain areas of technology would help me overcome prospective employers' concerns about a lack of a degree?

A.R.P.
Greenville, S.C.

A Many employers will consider depth of experience a valid substitute for a degree. For those employers who remain degree-conscious, however, a technical certification is usually not a satisfactory alternative.

My advice is to be open with employers. If you believe that a hiring manager can be influenced by a certification, then offer to go get one. This action will demonstrate your interest in the position and show your willingness to go the "extra mile" to land it.

Q I am interested in certification for systems professionals. What programs are available? What are the pros and cons?

B.B.
Birmingham, Ala.

A Certification comes in all shapes and sizes, and each carries its own set of requirements. Contact your local chamber of commerce or state department of education for a full list of available programs in your area.

I believe that entry-level candidates or professionals who are concentrating on one area of expertise can benefit from certification programs. These programs can help to enhance your skills and ultimately improve

your odds of achieving certain career goals. While certification programs will never prove harmful, there is no substitute for professional experience or a college education.

FAST TRACK CAREER ADVICE FOR THE '90s

Q I have worked with personal computers to some degree for the past seven years in research and development in the agricultural/horticultural industry. However, I'm now interested in working with desktop publishing, multimedia or applications/system development. Where do I start?

B.J.R.
Geneseo, Ill.

A My advice is that you target your goals. You mentioned three different career paths, each with a variety of job possibilities. Pick the one direction you would most like to take; then focus your search appropriately. If you can arrange a course of studies while initiating your search, then do it. Work with an agency that will act as a career counselor.

Perhaps you could find a non-profit organization in need of a volunteer for their desktop publishing system. While this would not answer any career objectives, it would help you to gain valuable experience.

Q I am a mainframe programmer/analyst with almost five years of experience. I have a bachelor of science in business with a concentration in computer

science. In July, I'll receive a dual MBA in marketing and information systems.

I left my first job after four years because I realized there was little chance for advancement. I now work for a consulting company, but I have a great deal of skepticism regarding its personnel policies and am thinking of leaving.

Am I trying to achieve too much too fast, or am I just going about things wrong? What would be some logical steps I should take to move up a corporate ladder?

Initials and town withheld

A In order to move up the corporate ladder, you must first find one to climb. There is nothing wrong with wanting to be recognized and rewarded for contributions. That will only happen, however, in a company that has goals that are in line with your own career goals.

If you are skeptical about your current employer, you will not perform to your true potential. Therefore, I would suggest that you begin an active job search immediately.

Judging from your letter, you have the skills, training and motivation to succeed. What is missing is an environment that will allow you to demonstrate your capabilities.

Steiner is a recruiter and marketing director for Coriko Recruiters and Contract Solutions in Salem, N.H.

We welcome your questions. Send them to Cathy Duffy, Careers Fast Track, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701, or fax them to (508) 875-8931. Letters may be edited for brevity and clarity. Your initials and town will be printed unless you request otherwise.

JOB SNAPSHOT

PC support specialist

Job Snapshot is a monthly column identifying key attributes of information systems career positions.

► **JOB REQUIREMENTS:** Companies hiring personal computer support specialists look for people who are technically conversant with PC hardware and software and who also have exceptional interpersonal skills. On the technical side, PC support personnel must be familiar with desktop operating systems (DOS is a given, but now employers also look for knowledge of Microsoft Corp.'s Windows and OS/2) and major types of applications software.

► **CAREER PLUSES:** If you like change, diversity and working with people, this is the job for you. Professionals in this kind of position say there are no dull moments, because the technology is constantly changing. It's also a visible position because you get exposure to users at all levels of the company.

► **CAREER MINUSES:** Typically, PC support staff work long hours and take a lot of flak. There is very little control over the environment and the pace, and that can be frustrating. Problems tend to occur in spurts, and then everyone wants attention at the same time. By and large, PC support departments still occupy the low end of the IS totem pole in terms of status and compensation.

► **SALARY ESTIMATES:** *Computerworld's* 1991 Salary Survey shows that PC support specialists earn an average annual salary of \$32,574. The highest regional salaries are found in Northern California, where the average is roughly \$4,500 higher.

► **ADVANCEMENT POTENTIAL:** While not all companies have an established career track for PC support, two primary routes are starting to emerge. One leads up through the technical ranks to team leader, product manager and project director. The second points in a managerial direction, with PC support specialists moving up to jobs as supervisors or directors of end-user computing. Sometimes PC support staffers also move laterally into customer departments as business analysts. The opportunities are almost endless, says one PC support specialist, because this sort of job provides exposure to so many areas.

► **REAL-WORLD ADVICE:** Consume as much information as you can about PCs and volunteer for PC work in your group. PC support specialists are still, more often than not, hired from within. In one PC support department at a medical care facility, a former nurse, an ex-hospital administrator and a former materials manager were working alongside staff with computer science degrees. So get familiar with the software used by your company and build a reputation as the PC guru in your area.

Researched and written by Kathleen Gow, a free-lance writer based in Medford, Mass.

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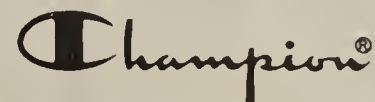
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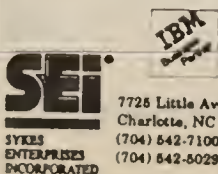
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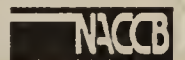
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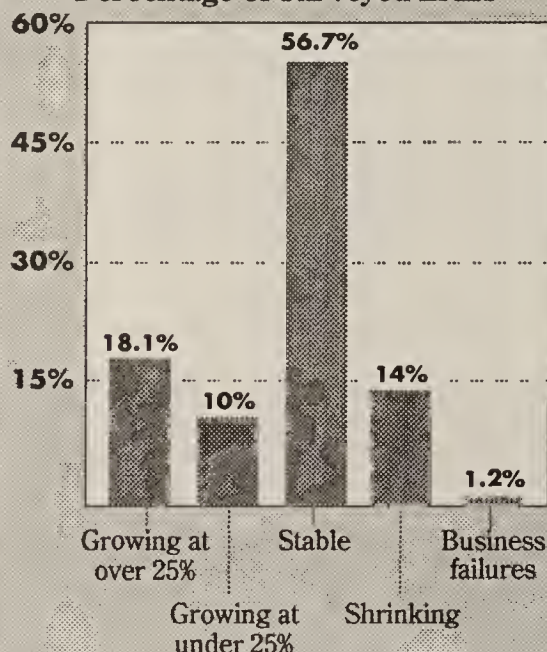
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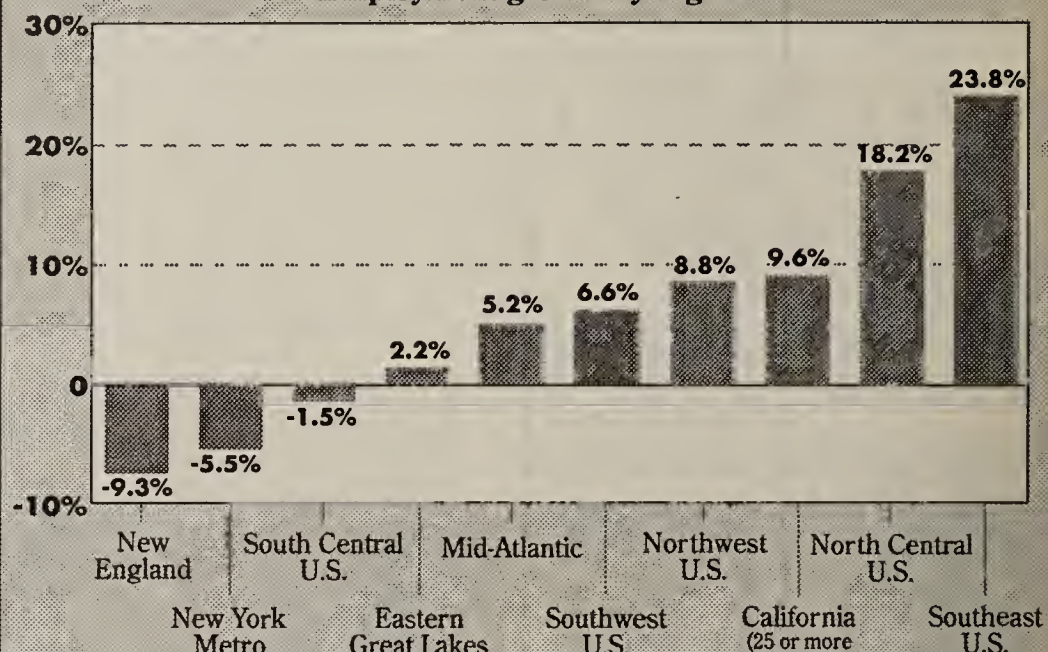
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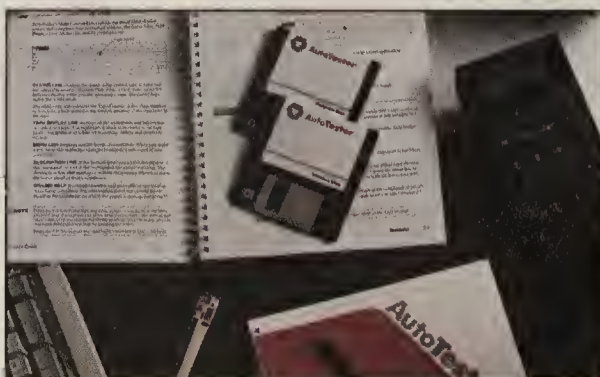
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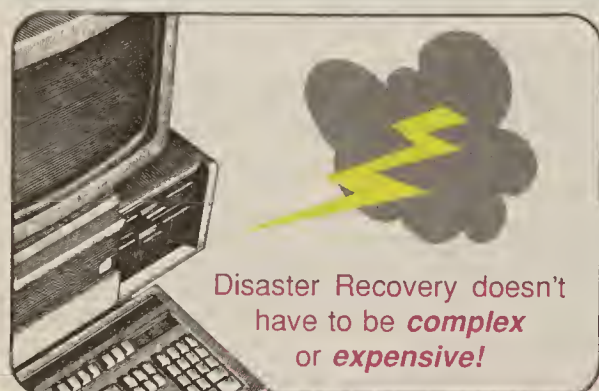
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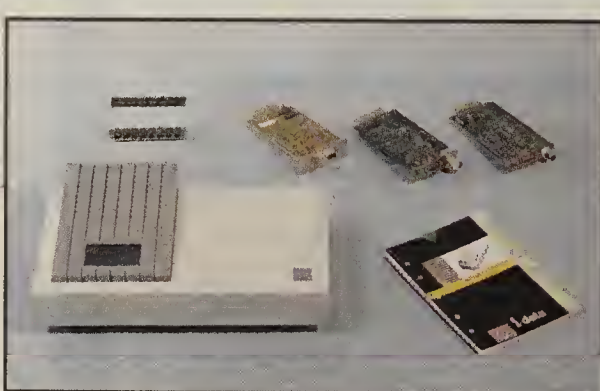
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MARKETPLACE

Making chargebacks easier to swallow

BY ALAN RADDING
SPECIAL TO CW

Most large information systems organizations hate chargeback systems. So do their client departments. But top corporate management loves them. What exactly is the problem here?

A number of complaints come up repeatedly about chargeback systems, according to Dean Meyer, president of NDMA, Inc., a Ridgefield, Conn.-based publisher of a 1991 study of IS chargebacks called "The Internal Economy: A Market Approach."

IS professionals and users alike call chargebacks an administrative nightmare, Meyer says. They say these systems don't improve the quality of decision-making or encourage innovation and are focused on accounting, not managing.

The biggest problem, Meyer continues, is that chargebacks frequently amount to "taxation without representation." The business units foot the bill, but they have little say in the IS decisions that underlie the bill and lit-

tle control over the cost.

Even some IS managers who have chargeback systems doubt whether they really promote better use of IS resources. "I question whether chargebacks really help control usage or merely account for usage," says Bob Hanson, assistant director for finance and administrative services at Washington State University in Pullman, Wash.

Powerful tool

Despite the complaints, many organizations feel chargebacks are a powerful tool to motivate both IS and its business unit clients to control costs.

"If we don't charge back, users want all they can get because they think it's free. Then the CIO gets into a constant power struggle where either the squeaky wheel or the biggest gorilla always gets its way," says John Alexander, senior vice president and chief information officer at Unum Life Insurance Co. in Portland, Maine.

Chargebacks help clients "understand there is a cost to things. If they add a line to a statement and they send out several million statements each month, there

will be an increased cost," says Larry Cox, vice president and controller at Sears Technology Services in Schaumburg, Ill.

In fact, there are a number of good reasons for implementing a chargeback system — allocating scarce IS resources, making users aware of the cost of IS, making IS self-supporting or containing spiraling demand.

Few people will argue with those goals, but achieving them to set up an effective chargeback system is easier said than done. Key hurdles include defining the right objective for the organization, setting prices and educating users.

Establishing an effective objective is the first obstacle. Different organizations use chargebacks for different purposes. For example, "our real objective is to help managers understand their choices," Alexander says.

As systems become more distributed, managers have more options: personal computer or mainframe, batch or on-line. The chargeback system allows managers to weigh their decisions in light of the relative costs of each option. They know, for instance, exactly how much an application costs on a PC vs. a mainframe.

The Topeka-based Division of

Information Systems and Communication for the state of Kansas uses chargebacks to finance itself because it gets no annual allocation from the state, assistant deputy director Don Neiman says. Under most circumstances, however, consultants advise against financing IS as the objective of the chargeback system.

Rather than finance IS, Meyer advises that chargebacks be used to allocate scarce or costly IS resources. "When the price is zero, demand is infinite," Meyer says. Chargebacks become "the best way to set priorities and filter out unworthy projects." Organizations with a severe applica-

tions development backlog, for instance, typically lack an effective chargeback system, Meyer adds.

Once an objective is established, an IS organization should develop pricing and billing practices that support its intended goals. The rule of thumb is to charge customers only for what they can control. At Sears, for example, "we are responsible for the unit cost [of IS services]. The clients are responsible for controlling usage," Cox says.

Pricing generates heated arguments. Prices can reflect the cost of IS, a profit for IS, the com-

petitive market, different service levels or demand by which the price is adjusted to motivate customers to use some services over others.

Cost basis

"We set our prices on the basis of our costs," Hanson says. Included in the price are both the IS department's operating costs and capital expenses. But government regulations prohibit a state agency from setting prices to make a profit or as a way of steering users to other services.

Cox, by contrast, offers his customers different prices based on the service level they require. "We don't price to motivate people one way or another, but if they want a certain response time or a certain level of service, there is a price for that," he says.

The next big hurdle — education — comes when IS presents the bill. It must be presented to users in terms they can understand. "The billing statement is the key document," says Terence Quinlan, president of Financial Management at Data Processing, a San Francisco-based trade association. There is a shift away from billing in technical IS terms toward business measures of costs, such as the cost of processing a transaction and the cost of opening a new account.

Radding is a free-lance writer in Newton, Mass.



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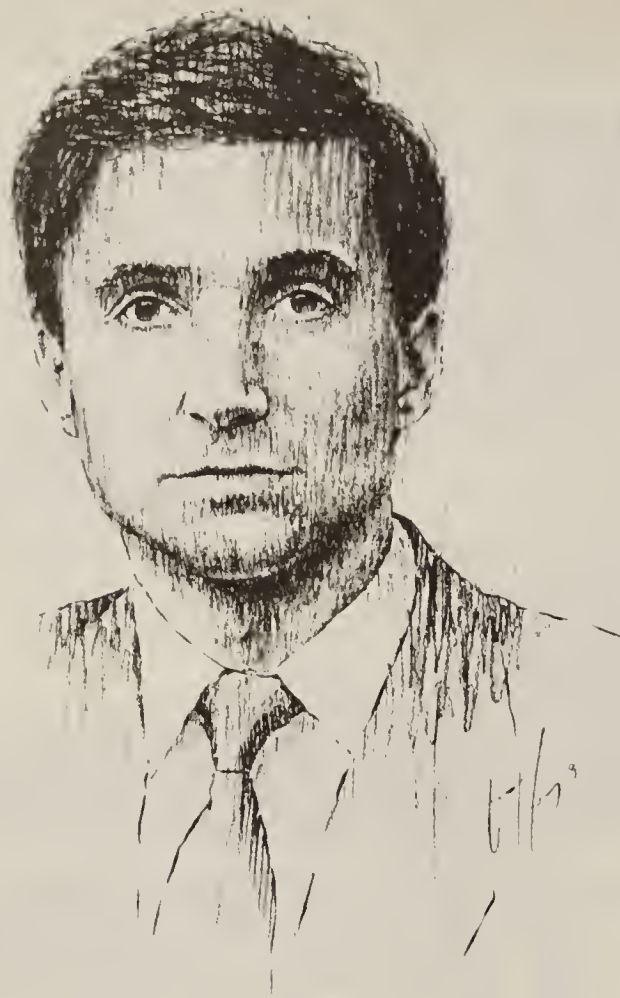
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INDUSTRY ALMANAC

RECOMMENDATION CHANGES

UPGRADED FROM NEUTRAL TO MODERATELY ATTRACTIVE: Legent Corp. (Donaldson, Lufkin & Jenrette Securities Corp.). Business seems to be picking up. The acquisition of Spectrum Concepts, Inc., which makes file-transfer software, fits well into Legent's Endeavor product line. The only near-term concern is whether Legent will have any delays following its major management reorganization in October.

UPGRADED FROM HOLD TO BUY: Everex Systems, Inc. (Prudential Securities, Inc.). The pluses are compelling, but the minuses spell caution. However, for speculative investors, buying Everex now may be worth the risk. Among the positive factors, Everex has made good progress signing up new distributors and national resellers, and another major new partnership should be announced soon. Also, operating expenses have fallen and will continue to drop over the next year. Essentially, Everex has all new products and is expected to complete its rollout within a few months.

UPGRADED FROM BUY TO STRONG BUY: Pyramid Technology Corp. (Bear, Stearns & Co.). AT&T, Olivetti USA and Siemens/Nixdorf Information Systems, Inc. are now running Pyramid's symmetrical multiprocessing operating system on both reduced instruction set computing machines and computers based on Intel Corp. processors. Distribution channels for Pyramid products are more balanced than is generally perceived. Right now, the firm derives 50% of its sales through direct channels and the other half through resellers and OEMs. Pyramid's Miserver S series, which is based on popular Mips Computer Systems, Inc. chips, is selling well.

UPGRADED FROM HOLD TO BUY: Cypress Semiconductor Corp. (Prudential). Cypress' stock price has dropped 34% since April, most likely because of the company reporting sequentially lower bookings in the second quarter after a strong first-quarter showing. The current share price of \$16 to \$17 makes Cypress appealing. The 12-month target price is in the low- to mid-\$20 range.

DOWNGRADED FROM VERY ATTRACTIVE TO MODERATELY ATTRACTIVE: Goal Systems International, Inc. (Donaldson, Lufkin & Jenrette). Although domestic business is healthy, the company reported disappointing earnings for the quarter just ended because of slack European sales and delays in the delivery of DB2 offerings. Goal is now replacing several senior managers in Europe and expects business to improve there next year. The DB2 products began to ship in late October and will not help Goal's bottom line until the company's fiscal fourth quarter. The earnings per share projection has also been decreased from 90 cents to 50 cents for fiscal 1992.

DOWNGRADED FROM BUY TO NEUTRAL: Integrated Systems, Inc. (Alex. Brown & Sons, Inc.). This computer-aided design and engineering software maker just announced an anticipated revenue shortfall of about 15% for its fiscal third quarter, ended Nov. 30. The sales dip is due primarily to weak Japanese business. Japanese automakers, like those in other manufacturing industries in Japan, have been in the vanguard of design software use for several years. Recently, however, belt-tightening has delayed buying.

KIM S. NASH

STOCK TRADING INDEX



THIS WEEK'S HIGHLIGHTS

- As plans unfolded for IBM's reorganization (pages 1, 92 and 93), shares dropped 2 1/4 points last week, closing Thursday at 90 1/4. Meanwhile, investors stomped Digital Equipment Corp. down 5 1/2 points to 57 1/2.
- Lotus Development Corp. advanced 3/4 of a point to 20 3/4 after announcing it will lay off about 400 employees. Microsoft Corp. climbed 4 1/2 points to 101 1/4, and Borland International, Inc. rocketed 5 1/4 points to 78 3/4.
- Unisys Corp. picked up 7/8 of a point to 4 5/8 after speculation of a takeover (see story page 8).
- Other losers last week included Texas Instruments, Inc., which slipped 1/4 of a point to 27 1/2, and Motorola, Inc., which closed at 57 3/4, down 1 1/8 points.
- Prudential Securities, Inc. upped its investment rating on Everex Systems, Inc. from hold to buy, but shares of the personal computer company declined 1/4 of a point to 3 3/4. AST Research, Inc. surged 2 1/4 points to 18 1/4, and Dell Computer Corp. rose 1 3/4 points to 25 1/4.

Computerworld Friday Stock Ticker

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Cognos Inc.	16.67
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Novell Inc.	4.00

TOP DOLLAR LOSERS

Digital Equipment Corp.	-5.50
QMS Inc.	-5.38
IBM	-3.63
Cray Research Inc.	-2.63
Network Systems Corp.	-2.50

Exch	52-Week	Range	Dec. 6	Wk Net	Wk Pct
			Close	Change	Change
Communications and Network Services Up 0.31%					
OTC	12.63	5.50	3 COM Corp.	11.00	0.50 4.76
NYS	69.75	55.75	American Info Techs Corp.	62.00	2.25 3.77
NYS	40.38	29.00	AT&T	37.38	1.00 2.75
OTC	4.13	0.88	Artel Communication Corp.	1.88	0.00 0.00
NYS	56.25	43.00	Bell Atlantic Corp.	45.13	-0.25 -0.55
NYS	56.25	45.38	Bellsouth Corp.	46.63	0.00 0.00
NYS	52.88	25.00	Cabletron Systems	43.50	1.25 2.96
OTC	29.25	8.25	Compression Labs Inc.	22.50	-0.63 -2.70
OTC	5.13	1.50	Data Switch Corp.	1.63	0.00 0.00
NYS	21.50	11.63	Digital Comm. Assoc.	17.88	0.00 0.00
OTC	25.25	14.00	Dynatech Corp.	17.75	-0.13 -0.70
OTC	12.38	5.00	Fibronix Int'l Inc.	6.38	0.25 4.08
OTC	22.50	6.50	FileNet Corp.	20.00	1.00 5.26
OTC	3.75	1.44	Gandalf Technologies Inc.	1.44	-0.31 -17.83
NYS	3.88	1.88	General Datacomm Inds.	2.50	-0.13 -4.76
NYS	34.13	27.50	GTE Corp.	31.88	0.63 2.00
NYS	63.00	44.88	ITT Corp.	51.50	-0.25 -0.48
OTC	31.88	17.88	MCI Communications Corp.	27.00	-0.75 -2.70
OTC	14.50	3.25	Microcom Inc.	12.38	1.13 10.00
NYS	15.13	4.00	Network Equipment Tech.	13.13	0.25 1.94
OTC	15.38	6.25	Network General	13.75	0.50 3.77
OTC	18.88	10.00	Network Systems Corp.	12.63	-2.50 -16.53
NYS	46.25	26.25	Northern Telecom Ltd.	44.38	0.75 1.72
OTC	53.50	15.25	Novell Inc.	53.50	4.00 8.08
NYS	79.25	67.00	Nynex Corp.	74.38	-0.88 -1.16
NYS	47.00	36.50	Pacific Telesis Group	41.25	1.50 3.77
OTC	11.63	5.13	Penril Data Comm. Ntwks.	6.50	-0.25 -3.70
OTC	43.50	10.50	PictureTel Corp.	39.50	2.75 7.48
NYS	17.88	11.50	Scientific Atlanta Inc.	14.75	0.63 4.42
NYS	61.25	49.00	Southwestern Bell Corp.	57.13	-0.63 -1.08
NYS	31.50	21.25	United Telecom	22.00	-1.25 -5.38
NYS	40.75	33.88	US West Inc.	34.50	0.13 0.36

Computer Systems Up 1.14%

OTC	20.75	7.50	Advanced Logic Research	9.75	1.25 14.71
ASE	17.88	11.63	Amdahl Corp.	12.63	0.13 1.00
OTC	73.25	39.00	Apple Computer Inc.	48.75	-2.00 -3.94
OTC	9.13	2.75	Archive Corp.	4.00	0.25 6.67
OTC	32.75	13.13	AST Research Inc.	18.25	2.25 14.06
NYS	9.38	4.25	Bolt, Beranek & Newman	5.13	0.00 0.00
NYS	21.63	8.75	Commodore Int'l	12.63	-0.25 -1.94
NYS	74.25	23.25	Compaq Computer Corp.	23.63	-0.38 -1.56
OTC	2.63	0.38	Computer Automation Inc.	1.13	-0.13 -10.00
NYS	13.75	6.75	Control Data Corp.	8.63	-0.50 -5.48
NYS	19.75	8.88	Convex Computer	9.38	-0.13 -1.32
NYS	52.25	29.00	Cray Research Inc.	43.88	-2.63 -5.65
NYS	22.50	3.75	Data General Corp.	15.38	1.13 7.89
NYS	4.38	1.00	Datapoint Corp.	2.50	0.13 5.26
OTC	36.25	14.25	Dell Computer Corp.	26.00	2.50 10.64
NYS	83.00	50.38	Digital Equipment Corp.	57.50	-5.50 -8.73
NYS	28.88	18.25	Harris Corp.	23.63	-0.13 -0.53
NYS	56.63	29.88	Hewlett Packard Co.	49.25	1.13 2.34
NYS	139.75	89.00	IBM	89.00	-3.63 -3.91
OTC	12.00	7.75	Information Int'l	8.25	-2.00 -19.51
NYS	145.75	105.00	Matsushita Electronics	109.50	3.25 3.06
OTC	20.88	7.50	MIPS Computer Systems	8.38	-0.50 -5.63
OTC	29.50	10.75	Pyramid Technology	14.38	0.63 4.55
OTC	19.75	7.50	Sequent Computer Sys.	11.13	0.88 8.54
NYS	48.75	22.25	Silicon Graphics	43.13	-2.38 -5.22
NYS	46.75	20.13	Stratus Computer Inc.	46.25	2.00 4.52
OTC	38.63	20.75	Sun Microsystems Inc.	23.13	-0.88 -3.65
NYS	17.63	9.13	Tandem Computers Inc.	9.88	0.00 0.00
OTC	4.75	1.25	Tandon Corp.	1.50	-0.06 -4.03
NYS	36.50	23.38	Tandy Corp.	25.38	-0.88 -3.33
OTC	29.25	9.75	Teradata	29.25	5.50 23.16
NYS	6.13	1.38	Ultimate Corp.	1.50	0.00 0.00
NYS	7.00	2.00	Unisys Corp.	4.38	0.63 16.67
ASE	5.75	2.00	Wang Labs Inc. (b)	2.50	0.00 0.00

Software & DP Services Up 2.90%

OTC	63.00	26.75	Adobe Systems Inc.	50.00	2.00 4.17
OTC	12.25	3.50	Aicorp	7.75	0.88 12.73
OTC	59.88	24.00	Aldus Corp.	35.75	1.00 2.88
OTC	28.50	16.25	American Mgmt. Systems	19.25	0.50 2.67
OTC	17.25	9.00	American Software Inc.	13.13	0.50 3.96
NYS	4.63	1.50	Anacomp Inc.	3.25	-0.13 -3.70
OTC	18.25	11.88	Analysts Int'l	13.50	-0.75 -5.26

Semiconductors Off 0.09%

NYS	15.13	4.00	Advanced Micro Devices	15.13	0.75 5.22
NYS	12.50	6.38	Analog Devices Inc.	7.75	0.25 3.33
OTC	13.50	6.50	Chips & Technologies	8.25	0.25 3.13
OTC	59.25	34.75	Intel Corp.	41.75	0.75 1.83
NYS	12.50	5.38	LSI Logic Corp.	7.38	0.00 0.00
NYS	19.13	9.00	Micron Technology	13.00	-0.25 -1.89
NYS	71.25	45.75	Motorola Inc.	58.38	-1.25 -2.10
NYS	8.38	3.88	National Semiconductor	5.50	0.00 0.00
NYS	47.63	27.38	Texas Instruments	27.88	0.00 0.00
OTC	12.25	4.13	VLSI Technology	7.00	0.25 3.70
OTC	16.75	5.00	Weitek	5.00	-0.50 -9.09
ASE	6.75	2.13	Western Digital Corp.	2.25	-0.13 -5.26

Peripherals & Subsystems Off 1.43%

OTC	2.75	1.13	Apertus Technologies	1.31	-0.06 -4.51
OTC	17.00	7.50	BancTec Inc.	14.38	-1.13 -7.26
OTC	27.75	7.00	Cambex Corp.	25.75	1.50 6.19
ASE	11.75	6.00	Cognitronics Corp.	9.38	-0.38 -3.85
NYS	29.75	12.50	Conner Peripherals	13.88	0.88 6.73
ASE	18.88	7.75	Dataram Corp.	17.38	0.63 3.73
NYS	13.00	4.88	EMC Corp.	9.63	0.63 6.94
NYS	49.75	37.63	Eastman Kodak Co.	46.00	-0.63 -1.34
OTC	11.25	5.13	Emulex Corp.	5.75	0.25 4.55
OTC	24.00	14.75	Evans & Sutherland	19.00	-0.50 -2.56
OTC	9.00	4.00	Imagica Corp.	7.75	-0.13 -1.59
OTC	28.25	12.75	IPL Systems Inc.	18.00	1.00 5.88
OTC	6.25	1.63	Maxtor Corp.	5.06	0.25 5.19
OTC	18.00	5.50	Micropolis Corp.	8.38	0.50 6.35
NYS	97.50	78.25	3M Corp.	87.25	0.50 0.58
OTC	10.75	4.75	Printronic Inc.	4.75	-0.75 -13.64
NYS	26.75	12.00	QMS Inc.	12.00	-5.38 -30.94
OTC	18.25	8.88	Quantum Corp.	10.00	0.88 9.59
NYS	8.00	4.63	Recognition Equipment	7.50	0.50 7.14
OTC	11.50	4.88	Rexon Inc.	6.88	-0.63 -8.33
OTC	19.88	7.13	Seagate Technology	9.25	0.38 4.23
NYS	51.50	17.75	Storage Technology	40.75	1.13 2.84
NYS	30.88	16.00	Tektronix Inc.	17.50	0.38 2.19
OTC	0.53	0.16	Televideo Systems	0.16	-0.09 -37.60
NYS	66.00	34.13	Xerox Corp.	63.38	1.38 2.22

Leasing Companies Off 2.91%

OTC	16.25	7.50	Amplicon Inc.	13.00	-0.75 -5.45
NYS	28.38	17.00	Comdisco Inc.	20.50	0.13 0.61
OTC	16.25	8.88	LDI Corporation	13.75	-1.00 -6.78

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NEWS SHORTS

FCC lobbied on HDTV

Scientific-Atlanta, Inc., Zenith Electronics Corp. and AT&T are teaming up to lobby the Federal Communications Commission to accept the Zenith/AT&T Digital Spectrum Compatible high-definition television (HDTV) system as the U.S. HDTV standard, the companies said last week. Toward that end, Scientific-Atlanta is developing technology that will let satellites securely transmit the Zenith/AT&T signal — a must for HDTV programming to all markets.

U.S. T1 speed catches up to Europe

Metropolitan Fiber Systems, Inc. last week announced the nationwide launch of Mitrofiber E-1, a service that is said to extend the European 2.048M bit/sec. E1 standard all the way to the user's premises. Until recently, international companies could send at 2M bit/sec. speeds abroad but had to slow down to the traditional U.S. 1.5M bit/sec. T1 rates as soon as they crossed the Atlantic. While 2M bit/sec. long-distance services have become available in the U.S., few local exchange carriers support that rate, the firm said. The Oakbrook, Ill.-based alternative access carrier now offers 2M bit/sec. overseas connections from 12 U.S. cities at a cost of \$2,000 for installation of the first circuit and \$1,600 a month for a one-year contract.

AT&T to remarket Unisys' EDI

AT&T's electronic mail unit signed an agreement last week to co-market Unisys Corp.'s Unix V-based electronic data interchange package. AT&T Easylink Services will recommend the Unisys software, called EDIplus, to customers needing to integrate existing applications with EDI through an open systems platform. The Unisys package can also be used to access X.400-based messaging services.

Shades of Comdisco and IBM?

Adaptec, Inc., a Milpitas, Calif., maker of system I/O circuits and controllers, has sued Phoenix-based Insight Computers on charges of copyright violation, stealing intellectual property and unfair trade practices. Adaptec said Insight copied Adaptec's software and documentation in an effort to convince customers that they were purchasing Adaptec products. Insight Divisions Distribution Network, Inc. and Hard Drives International were also named in the suit.

NBI pumps up revenue

Financially troubled NBI, Inc., the Boulder, Colo., firm best known for word processing, stuck a few feathers into its systems integration hat last week. The company announced that it had been selected to provide integration services for six new accounts scattered from Minneapolis to Denver to Southern California. The company estimates the new business will bring in \$670,000.

DEC stayed in court action

Digital Equipment Corp. received a setback of sorts when the District Court of Hamburg, Germany, awarded Micro Technology, Inc. a stay of DEC's patent infringement suit. The stay was granted until Micro Tech's patent nullity action against DEC, also in Germany, is decided. DEC has charged that Micro Technology GmbH infringed on its SDI and STI interface patents.

FIT to be tied

Orlando, Fla.-based Newtrend, which targets outsourcing services at financial institutions, last week announced an agreement in principle on a multiyear, \$40 million contract with Financial Information Trust (FIT). If it closes, the FIT deal will be Newtrend's eighth multimillion-dollar outsourcing agreement this year. FIT, which ranks among the nation's largest cooperatively owned financial data centers, will be serviced out of Newtrend's Des Moines, Iowa, IBM center — the first of three planned for the firm's national service network.

3Com wiring hubs expand nets

BY JIM NASH
CW STAFF

SANTA CLARA, Calif. — 3Com Corp. last week announced a family of 10Base-T wiring hubs said to allow small networks to expand without requiring users to swap out their hub equipment.

3Com is paralleling moves by such hub competitors as Synoptics Communications, Inc. and Cabletron Systems, Inc. to offer a suite of low- to high-end wiring centers.

The product arrays aim to accommodate the various-size networks that can exist within one large organization or networks in growing small and midsize firms.

3Com's base product, the Linkbuilder 10BT, is a dumb wiring center for 10Base-T local-area networks. It is priced at \$1,095 and is scheduled to ship next month. 10Base-T is the standard for running Ethernet

LANs over unshielded twisted-pair wiring.

An intelligent version, the \$1,995 10BTi, contains software allowing the hub to be managed by de facto standard Simple Network Management Protocol (SNMP)-based network management systems.

Logical link

Under the 3Com scheme, linking an unmanageable, or dumb, 10BT hub with an intelligent 10BTi grants the SNMP management capabilities to the 10BT.

This allows users with growing networks to add the management intelligence when needed without having to replace their 10BTs.

3Com said a 10BTi can be linked to the 10BT to form a single 24-port intelligent system. Claude King, senior systems analyst for the journalism school at the University of Florida, said he

had looked for a new hub system, and "none can be lashed together" into one logical system.

King said he has 3Com's Multiport hubs, which lack intelligence. He said he plans to pick up an undetermined number of the 10BT and 10BTi systems. They will not add intelligence to Multiport machines.

The Issaquah School District outside Seattle will pick up 36 10BTs next year, gradually adding some 10BTis after they ship sometime in the second quarter of 1992. Ron Leslie, information systems manager at the district, said the two-tiered distribution will take care of Issaquah's goal to build a basic wide-area network among its 18 buildings but then add manageability to the network.

The intelligent hub market was a \$287 million chunk of the \$1 billion 1990 total hub market, according to The Yankee Group, a Boston-based consulting firm.

Lotus cuts: Tactical changes, shifts to follow pink slips

CONTINUED FROM PAGE 1

from Microsoft Corp. and Borland International, Inc. It also must tackle the perception that it is confused about its own strategic directions. "I think what has been the overwhelming problem is the vague strategy," said Charlotte Walker, chairman of Martin Simpson & Co.

Last quarter, Lotus reported revenue of \$218 million, a 37% increase, and sold nearly a million copies worldwide of 1-2-3, the largest quarterly spreadsheet take in its history.

Despite this performance, the firm has been plagued by troubling issues this year, including an embarrassing entry into the Windows spreadsheet market, reports of market slippage in its traditional spreadsheet arena, executive departures and a plummeting stock price.

In an interview last week, Lotus Chairman Jim Manzi addressed these industry concerns, saying the firm is in the midst of an ongoing plan to adapt to the changing spreadsheet market and to assume a leadership role in newer frontiers.

Lotus plans to sell customers a suite of products, from communications facilities such as database access, mail and messaging tools to traditional applications that will allow them to work effectively across a network.

This suite would include the Notes groupware application and IBM Officevision.

Manzi said Lotus has been guilty of not clearly explaining its direction, but it has been clear

about its strategy. "What people are a little confused about is how all the efforts really fit together," Manzi said. "That's one of the reasons we're excited about John Landry."

Landry, who replaces Frank King as chief technology officer, will help Lotus clearly explain its direction to the market, Manzi said.

Analysts agreed that Lotus has some solid product offerings. However, they said that does not clear up the problem of the com-

pany's lost momentum.

Reversing this decline is key because despite its efforts to diversify, Lotus still counts on spreadsheet sales for a big chunk of revenue. Martin Simpson said it estimates new spreadsheet sales will make up nearly 60% of 1991 revenue.

"The interesting thing is everyone thinks Lotus is bombing, but I think it's a redistribution of power," said Mary Conti Lofredo, a senior analyst at International Data Corp. "I don't think there will be dominance in this market the way there once was by Lotus. I think the PC community, being 10 years old at this point, has a wide range of users, so there has to be a wide range of products."

Winds of change

After the holidays, Lotus will have the nasty job of sending pink slips to about 10%, or as many as 400, of its 4,200 employees. And according to hints from Chairman Jim Manzi, there will be more changes at Lotus.

"The announcement was part of a series of things unfolding, and there's more to come," he said, declining to describe future changes.

The bulk of the layoffs will hit its Cambridge, Mass., staff. The company is targeting various headquarter support operations as well as spreadsheet development.

A Lotus spokesman would not confirm if spreadsheet developers would be let go, but the company's announcement gave that indication. It listed the product areas that would be excluded from cuts: word processing, Notes and CC:Mail. Spreadsheets were not on the list.

Also, Manzi termed as "pure speculation" the idea that Lotus will de-emphasize or cancel certain products.

At least one analyst said he expects another round of layoffs, but Manzi said there is currently "zero expectation" to do so.

He said the company's plans for 1-2-3 on multiple platforms will continue, but "if I put a priority list together, I'd put VAX and mainframes at the very, very, very bottom."

ROSEMARY HAMILTON

PC unit controls own destiny

Skeptics voice concern as Cannavino takes control of Personal Systems

BY MICHAEL FITZGERALD
and CAROL HILDEBRAND
CW STAFF

ARMONK, N.Y. — IBM Vice President James Cannavino now has carte blanche to reverse the IBM Personal Systems operation's sagging fortunes in the personal computer market.

The move toward PC self-termination comes as part of an overall corporate restructuring designed to enable IBM to deal more effectively with its market-share decline.

What worries analysts and customers — and makes competitors skeptical — is IBM's history of promising broad changes and not delivering on them.

"It's pretty obvious that they need to do something, but whether this is the right something I really don't know. The way IBM has approached its problems has been disappointing," said Bob Holmes, a computer technology research analyst at Southern California Gas Co. in Los Angeles.

IBM's new dance

Still, Cannavino, who is also general manager of the Personal Systems line of business, said the restructuring of his \$10 billion division will make the PC group "enormously lighter on our feet."

"Users and customers will see a much more aggressive, leaner, market-responsive IBM" on the PC side, agreed John Dunkle, an analyst at Workgroup Technologies, Inc. in Hampton, N.H.

As such, users were cautiously positive, although many said it

was not clear to them how IBM will change.

In fact, much of what IBM did last week simply gave official blessing to operational changes already in motion.

Cannavino acknowledged that on the PC side, it will be business as usual, with three major exceptions: He now controls pricing and manufacturing and

when some analysts expect it to introduce a low-end notebook PC.

Ch-ch-changes

Principal changes unfolded last week include the following:

- Cannavino now controls pricing of PC products, which may mean more aggressive pricing.
- IBM will move into new distribution channels, including mail order. "You'll see us in all the distribution channels out there," Cannavino said.

IBM has put one executive in charge of each of its five regions worldwide, with responsibility for business results in their region. All five sit on an executive board that is chaired by Cannavino.

- Manufacturing is now under Cannavino's control. Before, Cannavino had controlled the two U.S. facilities but not the plants located in six other countries.
- An Entry Systems Technology group, looking two to five years ahead, was formed to coordinate product development and research.

The Entry Systems Division will concentrate on research for products expected to hit the market within 18 months.

Untouched were the Advanced Workstation Division, which makes IBM's successful RISC System/6000 products, and the PC Programming Division.

Cannavino said the reorganization would not alter OS/2 2.0's March 1992 delivery date. Nor will IBM's alliances with Apple Computer, Inc., Borland International, Inc. and others be affected.



John Martini

IBM's Cannavino now determines division's pricing and manufacturing

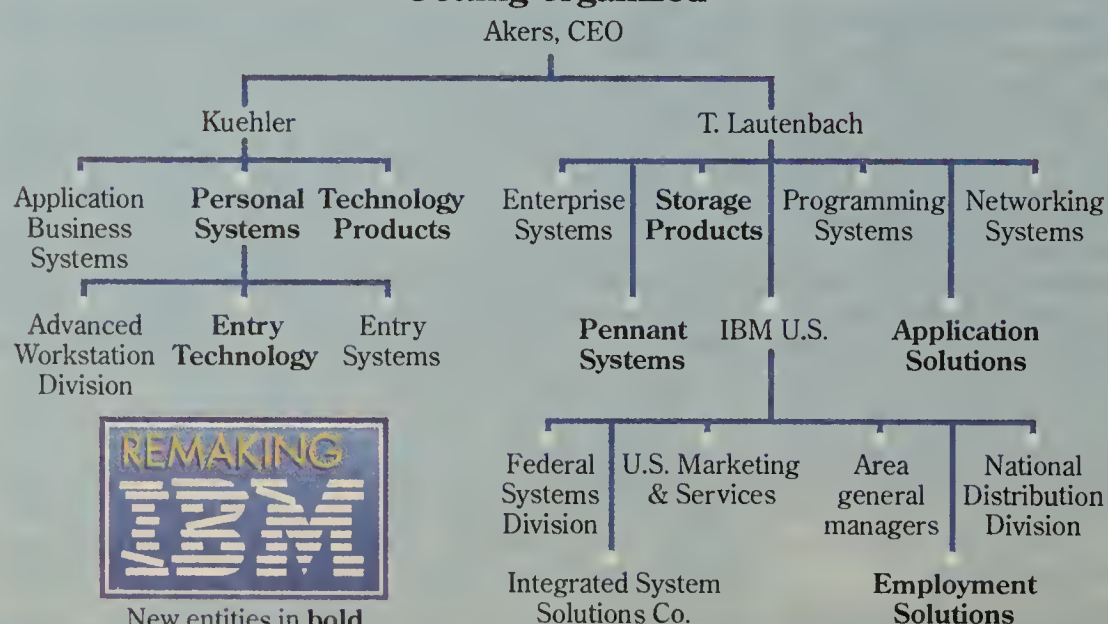
has a more streamlined organization.

"I can see the difference already," said Robert McLoughlin, assistant vice president of microcomputer procurement at New York Life Insurance Co., who said his sales representatives became more responsive literally overnight.

However, McLoughlin said IBM still has to prove to him it can deliver products faster, and its pricing remains a concern.

Analysts said they expect no significant shifts in IBM's pricing for at least six months. Proof of whether IBM can deliver could come as early as February 1992,

Getting organized



Source: International Data Corp.

IS heads wary of IBM promises to change

CONTINUED FROM PAGE 1

"We've been through a lot of IBM reorganizations before, about one every 18 months," said Marston, whose information systems career dates back to the mid-1950s. "Some have worked, and some haven't. It may be more difficult to get a total solution to your problem [after the restructuring], but they should be faster on their feet."

American President's situation may be a microcosm of what ails IBM's business. The trans-Pacific shipping firm plans to migrate to an Enterprise System/9000, but not until 1993. "Anything you can do to forestall the move, you do," Marston said.

Of a more immediate nature were IS concerns about losing the unified IBM sales and sup-

against each other to achieve a greater goal," he said.

Hancock and other customers also wondered about the fate of IBM's cross-platform integration schemes, such as Systems Application Architecture (SAA).

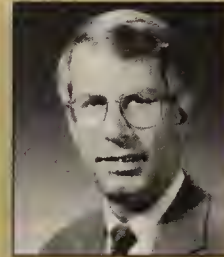
"If I'm the head of IBM workstations, I may not want to live within that grand scheme," Hancock said. "It will [become] more like a guideline to the business units, the way it is now for IBM's third-party partners."

Rockwell's Sutter feels a retreat from SAA and Officevision efforts might not be such a bad idea. "We were not a big IBM office customer five years ago, and we still aren't," he said. "All that effort to integrate probably hasn't sold an extra stick of iron into our company. We have tried



"It may be more difficult to get a total solution to your problem."

Jim Marston
Chief Information Officer
American President Cos.



"This shows the right mind-set."

Tom Pettibone
Senior Vice President of
Information Systems and Services
New York Life Insurance Co.

port teams that they now enjoy.

"No customer is going to want five different IBM people calling and selling competing products," said Jack Hancock, executive vice president of the product and technology support group at Pacific Bell in San Ramon, Calif. However, IBM has said this will not happen.

Like Hancock, Jim Sutter, vice president and general manager of IS at Rockwell International Corp. in Seal Beach, Calif., said he would hate to see any change in his current single account team.

"Back in the '60s, when IBM had different divisions, we'd have several salespeople from the same company calling on us, and it didn't make any difference," said Sid Diamond, vice president of IS at Black & Decker Corp. in Baltimore.

Competitive advantage

Seagram's Cooper, however, sees potential opportunity for large customers to get better deals by encouraging competition among IBM's newly independent units. "One might be able to work the various parts

hard with them in the office, but they just haven't been able to move quickly enough."

Rockwell is a huge IBM mainframe shop but uses office technologies that include Novell, Inc. and Banyan Systems, Inc. local-area networks and Wordperfect Corp. software.

Sutter praised the restructuring for "instilling a tremendous sense of urgency" in its employees. Of the 20,000 job cuts, he said, "It wouldn't shock me to see them have to cut even more."

Despite concerns, nearly all large customers agreed that IBM had to make major changes as a company; Hancock said the restructuring was about three years overdue. At New York Life Insurance Co., Senior Vice President of Information Systems and Services Tom Pettibone said he welcomes what he sees as a major step in the right direction.

"This shows the right mind-set," Pettibone said, "and yes, I feel confident that IBM can bring it off. Not without pain — but they can do it."

Senior editor Nell Margolis contributed to this story.

Storage unit expands beyond mainframes

BY JEAN S. BOZMAN
CW STAFF

SAN JOSE, Calif. — The new-found independence of IBM's Storage Systems Products Division (SSPD) will cause assembly lines at eight storage-related manufacturing plants worldwide to whirl a bit faster, industry analysts predicted last week.

Last week's announcement only revealed that IBM would spin SSPD off into a separate unit. IBM declined to detail the unit's financing and staffing. Even a new name has yet to be announced.

However, as an independent business unit, SSPD, now known as IBM's new Storage Products line of business, will be able to more aggressively expand its

charter beyond IBM mainframe storage products. The unit will accelerate development, manufacturing and marketing of disk drives and tape drives of all sizes to all comers.

Didn't need a fix

"This was a part of IBM that didn't need fixing," said James Porter, president of Disk/Trend, Inc. in Mountain View, Calif., adding that SSPD had been on a very aggressive growth path. Still, "Excess capacity led to a need to get more use out of their existing factories," he added.

IBM already controls an estimated \$11 billion of the \$53 billion worldwide storage-related products business, analysts said.

Through an extended OEM business, IBM is hoping to boost

sales even higher.

Its closest storage competitors, Fujitsu Ltd. and Hitachi Ltd., each rake in less than \$1.5 billion in annual disk drive sales, according to Porter.

Until now, SSPD had controlled only three U.S. factories. Under the reorganization plan, SSPD will control all IBM storage facilities worldwide, including five other sites abroad.

Besides gaining greater control over manufacturing plants, SSPD managers will no longer have to arm wrestle with their counterparts in IBM's mainframe business for resources. "The storage group's products span the entire range of IBM platforms, so it made little sense for it to be reporting to IBM's mainframe group," said Frank

Gens, a senior analyst at Technology Investment Strategies Corp. in Framingham, Mass.

The stand-alone storage business is nearly as big as IBM's \$14 billion workstation business, Gens noted.

Ray AbuZayyad, an IBM vice president who has been running SSPD since its formation in July 1990, will now report directly to IBM Senior Vice President Terry Lautenbach, a member of the IBM management committee.

Full participation

"We will be able to participate in all aspects of the storage industry," affirmed AbuZayyad, now general manager of IBM's newly independent storage business.

One analyst said the sign of that freedom could be the

growth of its OEM business, which began in the mid-1980s with sales of high-end IBM drives to Siemens AG in Germany. Today, IBM sells modified IBM 3380 and IBM 3390 drives to Siemens and to Bull HN Information Systems, Inc. along with modified IBM 3480 tape drives to Digital Equipment Corp.

In coming months, that kind of reselling will be extended to even more firms — and to low-end and midrange disk products, said Charles Haggerty, vice president of OEM storage products. In fact, IBM began test-marketing OEM sales of low-end disk drive products in 1991, Haggerty said.

To succeed in the highly competitive low-end market, IBM will have to become the low-cost producer of personal computer drives, said Marc Butlein, chairman of Meta Group, Inc. in Westport, Conn.

Big Blue loosens bolts on bureaucratic hold

CONTINUED FROM PAGE 1

any true departure from business as usual."

"These aren't revolutionary changes," added Sidney Diamond, information systems vice president at Black & Decker Corp. in Baltimore. "Many large companies have gone through similar decentralizations; many — GE, for instance — have done it successfully. The model is proven."

What a concept

The reorganization will leave IBM as a holding company overseeing a multitude of autonomous and semiautonomous operations. Analysts said they like the concept but are skeptical about whether IBM can successfully adopt it.

"I'm not without my doubts," said Fred Cisewski, vice president of IS at Atlanta-based Bancsouth Corp. "There are a lot of questions they haven't addressed yet: For instance, under this organization, what's going to drive the sales force? How are they going to manage the account relationship with customers?" However, he added, he is

not overly concerned about what might fail to work in the proposed new IBM "because this time, if something doesn't work, someone close to the customer is going to be able to fix it."

Skepticism last week was traced in part to the fact that massive redirections at IBM are far from rare. Moreover, one analyst noted, IBM has now reached the point at which its vaunted strategies — all aimed at giving users more of the products they want at lower prices and with better engineering — are beginning to contradict each other.

Marc Schulman, an analyst at UBS Securities, Inc., said if last week's move to divide the hardware-driven monolith into a federation of autonomous entrepreneurial units actually works, "what happens to SAA and Officevision? The future of these integrative efforts is now in serious doubt, as each [business unit] will presumably be free to follow its own path." This go-round

could be different, Cisewski said, because this time, IBM appears ready to put "authority as well as responsibility in the hands of the business unit leaders."

IBM emphasized last week that, to varying degrees, each of the newly carved-out units will be empowered to do its own sourcing and staffing, set its own development goals and agendas and support them with whatever alliances it finds are necessary, both within and outside IBM.

Correspondingly, each unit will be measured — and, analysts widely inferred, measured mercilessly — "on revenue, margins, cash and returns," the company said.

IBM's Integrated Systems Solutions Corp. (ISSC) subsidiary is widely considered to be the model on which many of the organizational changes are based. Bancsouth, Cisewski said, has therefore been a virtual beta test of the new IBM. In 1989, Bancsouth outsourced its data center to IBM; last May, the Bancsouth contract was inherited by ISSC.

"Our biggest gripe against IBM — and apparently [IBM Chairman John] Akers agrees — is that it's a very large bureaucracy that is a lot more capable of good intentions than of effective

action. ISSC, on the other hand, is much more agile and resilient," Cisewski said.

Many other users agreed with Cisewski's high hopes for the New Blue, yet along with most analysts, they were not ready to assume that what has worked for ISSC — still largely untested at six months old — will work for IBM.

Wait and see

The wait-and-see attitude that generally prevailed was appropriate, according to IBM spokesman Mac Jeffery. "This is just the beginning, not the be-all and end-all conclusive statement," he said, noting that several areas of key interest to the industry — mainframes, software and the

Application System/400 line, for instance — were given short shrift in last week's announcement but will be the focus of announcements to come.

Similarly, Jeffery said, details of the start-up financing arrangements for the various new subsidiaries and units were not announced because they are still being worked out. However, while "plenty of midnight oil is burning in the accounting department right about now, what does make it easier is that each of these businesses is profitable," he noted.

"If any were money losers, and we had to worry about propping them up instead of just rolling them out, then we'd have a problem," Jeffery added.



First steps

IBM announced its first steps away from the chokehold of bureaucracy and into entrepreneurial agility:

Businesses born and reborn:

- Storage Products, formerly an Enterprise Systems Division, is now an autonomous unit.
- Pennant Systems Co., a wholly owned subsidiary, will make and market advanced printers and related software.
- Employment Solutions Corp., a wholly owned subsidiary, will aid IBM with its own outplacement and recruitment issues. That expertise will later be marketed to other firms.
- Personal Systems gains a new entry systems technology unit, an executive committee and a quantum measure of autonomy.

Positions swapped, dropped or created:

- Ray AbuZayyad, former head of the Storage Systems Products Division, is now head of the Storage Products subsidiary, reporting to IBM Senior Vice President Terry Lautenbach. AbuZayyad formerly reported to Carl Conti, who is retiring from IBM at the end of the month.
- James Vanderslice, former managing director of Asia Pacific manufacturing, is now president of Pennant Systems, reporting to Lautenbach.
- Kenneth Lay, former director of education for the IBM personnel staff, is now president of Employment Solutions Corp., reporting to assistant general manager of personnel at IBM U.S.
- The Technology Products line of business now reports to IBM President Jack Kuehler; it used to report to Lautenbach.

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Word play**Chief information officer:**

n. A data king. While nominally in charge of one of the two company assets (the other is money), the CIO is too much of a computer nerd to be taken seriously as a future CEO.

Decision support:

n. Advice and data selectively culled from peers and consultants to reinforce your loop convictions.

Did you know . . .

What the largest fax in the world is? The Widefax from Widecom Group, Inc. in Mississauga, Ont., Canada. The fax made *The 1992 Guinness Book of World Records* because it can transmit blueprints, engineering drawings and other oversize documents up to 24 inches wide vs. the standard 8- to 12-in. size other fax machines can transmit.



"We are prisoners of . . . the technology of print and computers that robs language of its relational quality — its existence as a medium for live interchange . . . In other words, we ought to be talking to each other. We ought to get up from our word processors and [go] out into the corridors and schmooze." — *Jane Tompkins, a Duke University professor, writing on the "true nature of liberal conversation."*



1,000,000,000,000,000 BYTES

Ever wonder what comes after terabyte? It's petabyte, one of which equals 1,000 trillion bytes



Ever wonder what the following computer acronyms mean in other industries?

AI

Artificial insemination

ADA

Association of Drainage Authorities

CAD

Coronary artery disease

SQL

Standard quantum limit (physics)

VAR

Volunteer air reserve (Air Force)

WAN

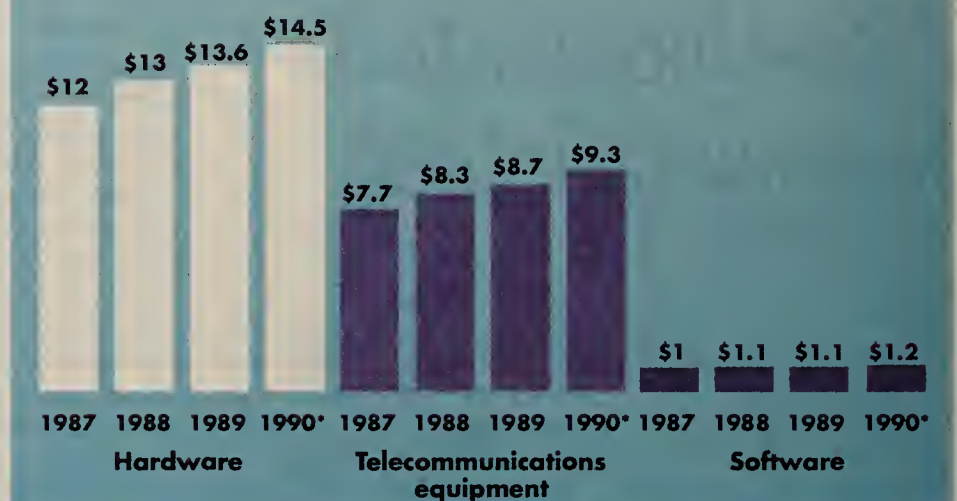
Work authorization numbers (NASA)

From our reader files:*The wacky world of technology*

"Our voice mail system had just been implemented, and people weren't quite sure about it. For instance, a user called up wanting to speak to me about a systems matter but instead got my assistant. My assistant proceeded to take the message down on paper, then called my voice mail and repeated the exact same message. Finally, she wrote a note on paper telling me there was a message on my voice mail." — *Kevin Murphy, Computerworld subscriber*

**Inquiring minds want to know**

U.S. information technology industry research and development expenditures (in billions)



*Estimated

► Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Zottola or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

Sources: CBEMA, Industry Marketing Statistics; October 1991 *Washington Journalism Review*; *Business Babble*; A *Cynic's Dictionary of Corporate Jargon* by David Olive, John Wiley & Sons, Inc.

INSIDE LINES

Yet another Unix flavor

► Novell and Unix System Laboratories (USL) are forming a joint venture to develop and distribute a new version of Unix System V Release 4. On Thursday, the two companies will formally disclose the venture and a plan to integrate the Unix operating system more closely with Novell's Netware network operating system. The new product will be sold against other versions of Unix, the USL spokesman said.

No rose-colored glasses at DEC

► Waxing very pessimistic about the near term, DEC COO Jack Smith said the computer industry is witnessing a "huge slowdown," while the economy at large yields "absolutely no reason whatsoever for optimism, none at all. The only question is, will things flatten out or get worse?" In an interview during DEC's worldwide corporate communications meeting last week, Smith said the Bush administration's economic initiatives appear to be "too little too late." And while Smith did not talk about the possibility of further staff reductions at DEC, he did say the company must be "even more competitive" to succeed in the current environment. In reference to the IS community, Smith noted that the "glass houses have collapsed onto the desktop," adding, "The proprietary business was wonderful. It was a great business to be in."

Three's not a crowd

► First the U.S. and USSR became buddies. Then the IBM/Apple alliance sprouted up. What's next in the few remaining weeks of this year of living strangely? Try three major rivals co-bidding on a contract. According to a source close to Andersen Consulting, the Chicago-based consultancy and two of its "very significant" competitors — while still dealing with each other at arm's length in most situations — are walking into the conference rooms at two potential user sites arm in arm. If the trio wins either or both deals, the source said, they will divide up the work — and the paycheck — among them as user demand dictates.

No high-end notebook from Compaq, yet

► Compaq will not ship a planned 486SX-based notebook computer this year, instead deciding to completely redesign it and bring it out early next year. The notebook had been expected to feature upgradeable processors and a screen that could be upgraded from monochrome to passive-matrix color in the first quarter of 1992. It was to weigh eight pounds and come with 4M bytes of random-access memory. Sources said the redesigned notebook will be out early next year and will be much more competitive than the killed product.

Take note: IBM's notebook draws near

► In the wake of last week's IBM restructuring came reports of IBM's coming high-end competitor in

the notebook arena, a notebook that will be based on the Micro Channel Architecture bus. Details were sketchy, but the time frame is the late second quarter or early third quarter. IBM Japan is already shipping such a product.

Has your PC had an antivirus shot?

► Top international virus experts were alarmed last week after an unknown person posted on a public Fido-net conference the source code to the Dir II virus — one of the most destructive yet. The source code can be used to either tweak or modify the virus to make it even more insidious, and it will probably result in the virus' being even more widely distributed, said Vesselin Bontchev, a researcher at the Virus Test Center at the University of Hamburg. The virus is believed to have been created in Bulgaria. The person who posted the virus used the name of Ahmed Dogan, the leader of a party representing the Turkish minority in Bulgaria.

IBM has been rumored to be readying two start-up trade magazines for the computer industry, but we certainly didn't expect this bombshell from Jim Canavino last week. His does-not-follow answer to our first question on IBM's PC restructuring was a hearty laugh and the comment: "We're just really getting set up to buy Computerworld." News Editor Alan Alper is always ready for a few good laughs. Phone him at (800) 343-6474, fax him at (508) 875-8931 or Compuserve him at 76537,2413.

Look down the road a bit.
The computer industry continues its consolidation with more alliances, consortiums, mergers, acquisitions and technology-sharing.

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